RECORD OF PROCEEDINGS OF A

COURT OF INQUIRY

CONVENED AT

TRIAL SERVICE OFFICE PACIFIC

BY ORDER OF

COMMANDER IN CHIEF

UNITED STATES PACIFIC FLEET

TO INQUIRE INTO A COLLISION

BETWEEN USS GREENEVILLE (SSN 772) AND

JAPANESE M/V EHIME MARU THAT OCCURRED

OFF THE COAST OF OAHU, HAWAII

ON 9 FEBRUARY 2001

ORDERED ON 17 FEBRUARY 2001

AS AMENDED ON 22 FEBRUARY 2001;

26 FEBRUARY 2001;

1 MARCH 2001; AND

9 MARCH 2001

At Trial Service Office Pacific
Naval Station, Pearl Harbor, Hawaii
Friday, 9 March 2001

The court met at 0800 hours.

All persons connected with the court who were present when the court adjourned were again present in court.

CC: Request by LCDR Pfeifer for assignment of additional counsel. This request is dated 8 March 2001, it has been marked Exhibit J and I am informed that LT Dan Shanahan from Yokosuka, Japan from the NLSO will be flying in this weekend to assist in his representation.

In addition, sir, the Commander in Chief, U.S. Pacific Fleet, ADM Fargo, has responded to CDR Waddle's request, the renewal of his request for individual military counsel. That request has been denied. Copies have been distributed to CDR Waddle and counsel. Counsel, I would like that marked as the next alphabetic exhibit in order. It will be marked as Exhibit Kilo.

The court requested that Counsel for the Court try to locate a copy of the signed watchbill, one was located onboard the GREENEVILLE yesterday and has been provided. I would like to have this marked as the next court evidentiary exhibit in order. Copies have been provided to the parties and I'm providing copies now to the members of the court.

One final point as we discussed yesterday the Ship's Sonar search plan was located. The court members had an opportunity to review the Sonar search plan and are satisfied that the search plan was properly prepared by the GREENEVILLE and the court does not desire that it be introduced as an evidentiary exhibit. They are satisfied that the document was properly prepared and executed.

PRES: Procedural matters from counsel.

Counsel for CDR Waddle, party (Mr. Gittins): I just ask for the Sonar Log, is that a classified document?

PRES: It is secret, yes.

Counsel for CDR Waddle, party (Mr. Gittins): Can we clarify what the exhibit, the watchbill--is that 41?

CC: For the record, the watchbill has been entered as Exhibit 41.

Counsel for CDR Waddle, party (Mr. Gittins): Who will provide copies of the watchbill, sir? Was it ascertained how the markings, the circles, etc. were added to that? Was that something--identified the watchstanders at the time of the mishap?

CC: Sir, we don't know at this point, we could certainly--questions can be asked of witnesses that are brought before the court as to how the document was prepared. At this point, we only know we've got the original document.

PRES: Counsel Gittins?

Counsel for CDR Waddle, party (Mr. Gittins): Nothing, sir.

PRES: Could you get CAPT Kyle, please?

CC: The court recalls CAPT Tom Kyle.

Tom Kyle, Captain, U.S. Navy, was recalled as a witness for the court, was reminded of his oath, and examined as follows:

CC: Captain, before we begin, I understand you'll be testifying concerning information contained on the slides that you have prepared for your testimony, in addition, a hard copy of those slides you have written and some notes to aid you in your testimony.

LCDR Harrison, would you have the--CAPT Kyle's notes marked as the next court evidentiary exhibit?

CR: It is marked Exhibit 42.

CC: LCDR Harrison, would you retrieve the court exhibit so that I can--that please—-

[LCDR Harrison did as directed.]

CC: Good morning, Captain.

WIT: Good morning.

Questions by Counsel for the Court:

Q. Captain, yesterday you testified that one of the reconstruction's that was done was performed by DEVRON 12, is that correct?
A. That is correct.

Q. As part of the reconstruction effort, did you ask DEVRON 12 to determine whether any of the sonar contacts that they evaluated was in fact the EHIME MARU?
A. Yes, I did. In the report that DEVRON 12 gave to me they said there was very close correlation between the contact being tracked as Sierra 13 to the reconstructive track they came up with for the EHIME MARU, which is consistent with our conclusion as well.

Q. Sir, referring you again to the chart you see up on the screen, which is the Sierra 13 versus reconstruction chart. There were a lot of questions yesterday particularly from ADM Nathman concerning signal-to-noise ratio. Is it possible to get range information from signal-to-noise ratio alone?
A. I think it is a very important point that--the answer is sort of yes and no. We have learned through experience that low or medium SNRs are not a determination of range. We train ourselves, our operators and ourselves to not draw any conclusion from a low SNR contact.

There can be very large or loud contact that may have or present aspects or the SNR drops off. It is very common for a ship to have a null area, example would be a large tanker for instance off the bow, his sound would be masked by the cargo he is carrying and the large size in front of him, his engine sound would be masked from the sonar system. So, although the contact would a very loud and heavy contact maybe at close range his SNR might be low. On the other hand, it is we always view rising SNR and strong SNR as indication of a potential close contact.

Low SNR is not an indication of range at all. We try not to draw any inference on range based on low or medium SNR, but high SNR is sort of an alert, says a contact may be coming close.

Q. Sir, I would like to direct your attention now to the graph on the right hand side, the range versus time. If the Commanding Officer or the Officer of the Deck had looked at the fire control solution just prior to coming to periscope depth, what would this data have told them?
A. It really depends. There's important point to understand that if anyone had gone to one of the other unused consoles on the fire control system, on the day in question, as I understand, the situation there was only one operator there, one console being used by that operator, so there were three additional consoles not being used. If the Officer of the Deck, or Captain, or anyone else in the Control Room decided to go to one of the consoles and to view the contacts being tracked, independently, and you just called up the solutions on those contacts, Sierra 13, Sierra 14, Sierra 12, the only thing you would've seen up there would be system solution, not the trial solution that is being depicted that was probably on the Fire Control Operator's screen.

So if he, in preparation to go to periscope depth, had gone to one of these auxiliary consoles and selected Sierra 13 and looked at it, he would've looked at this solution up here. That is what would've been depicted. Now, I should add that the solution, if you looked at the analysis display where the processing is being done, if he called up that display, which is called MATE, that I showed in the demonstration earlier in the week, it probably would've indicated in the last few minutes prior to going to periscope depth that the solution was not very accurate, and that would've been readily apparent to him.

On the other hand, if he had gone to a different display, say there is an option to go to a geographic display that just has a top down look on ship's position with contacts being tracked geographically around the ship. If he had just looked at those displays, they would have just shown the system positions relative to own ship with no indication of quality of solution apparent. Depending on what and if an independent look was done on the screen, you could have different answers coming out.

On the other hand, if the independent person went and looked at the Fire Control Operator's screen, I'm fairly confident that he would've seen a display for Sierra 13, that was probably reflecting this solution that was in development. It is a very important question and different answers could come out depending on the actual scenario that occurred prior to going to periscope depth.

Q. Seems to me that there is a big if in what you've just said, the if being if it had been checked. Is the Officer of the Deck required to check the fire control solution?
A. He is required to satisfy himself that it is safe to go to periscope depth. He can do that in a number of ways, he can do that by his own analysis on a normal day without equipment degradation, you would probably do that using the AVSDU display, mental analysis, maybe some calculations on his own. Most Officer of the Decks that I see will go to the fire control screen and verify his mental picture with what the Fire Control Operator is doing, that would be at normal process, report the solution on this contact he would check it against what he has come up with independently, yes, the Officer of the Deck should be involved in looking at the fire control solution.

The Commanding Officer is required to concur that it is safe to go to periscope depth, so depending on the Commanding Officer's level of confidence in the OOD's description of how he verifies, how the Officer of the Deck verified it was safe to go to periscope depth. The Captain may or may not do an independent review of the fire control screen. He has to be satisfied that he has enough information to, in his own mind--that it is safe to go up.

Q. Is that stated anywhere by regulation in the submarine force or is that just good practice?
A. No, it is stated in the standing orders for going to periscope depth, this process of evaluation, the Officer of the Deck's responsibilities, and the fact that the Captain must concur and give permission to go to periscope depth.

Q. So, the prudent action is to check all of the available sensor data that the Officer of the Deck has or the Captain has in the Control Room before you do that?
A. Or on sonar, if you have to go Sonar. If you were puzzled or you need more information about a contact and you think Sonar may have some answers. Open that door to Sonar and ask the Sonar Supervisor or have the Sonar Supervisor come out and report on the added information required.

Q. Captain, what you're telling me in this process--it is not as if the Control Officer, the Officer of the Deck, or the CO, whoever is up, one of the senior officers, whoever is controlling the ship. It's not as if they stand between the periscopes and wait for the information to flow to them and be told its safe to go. There is much involvement on the part of those senior watchstanders or in case of the XO or CO, whoever is involved in the exercise of getting to periscope depth, to reach down into the screens, page through the fire control systems, to search the data themselves.
A. That is correct, he must be satisfied that he has enough data and he is comfortable and that he understands the contact situation. He must go deep, dig as deep as he needs to be comfortable. That he understand the contact picture and that it is safe to go to periscope depth. It may mean reaching all the way back and going into the Sonar Room itself, to see, to talk to the operators sitting on the consoles who are listening to the contacts.

The degree that you have to go, how far you have to dig is depended on the situational independent, but he has to go through every contact in his mind. Every contact being tracked, being resolved in his own mind that it is safe to go to periscope depth with respect to that contact.

Q. Sir, we've discussed here prior to your testimony here about make up of a typical sonar team, Fire Control Team, people that add information into solving this problem. That the officer is controlling the ship who's involved probably has, is stepping back the furthest back at getting integration and have a wider view, if you will, of the entire situation.
A. That is correct.

Q. Each of the operators with all having a vital piece of information necessarily isn't knowledgeable of the entire picture?
A. That is correct, the Officer of the Deck is trained basically to take the whole picture, he is the center of all the requirements around the ship, what needs to be done, what the objective is. He sort of is, if you will, the quarterback of this whole team of people and he has the entire play in mind and the team obviously works better, like any team, the more he can disseminate the objectives and what is being done and the overall situation.

His view of things, so all of the players--all of the participants are understanding what the objectives are, what

we're trying to do, and what the plan is. For instance, in a normal periscope depth procedure it says to have a briefing of all your key watchstanders, the Officer of the Deck should conduct a briefing including all the sensor operators, the ESM, radar intercept folks, the Radioman who are going to do communication, the Sonarman, the Fire Controlman, and discuss this, the whole plan of going to periscope depth, to get them all thinking on the same, to the same objective, so they are all working toward the same goal. What courses does he plan to steer to go to periscope depth, which course he goes up on, what the sea state is, what the environmental conditions are, the more he can disseminate that information, the more efficient the team will work. If you let your operators work in isolation, you won't have a very coordinated product. It is a team process.

Questions by a court member (RADM Sullivan):

Q. TMA--often times in a very high tech world, we tend to think of things as digits or here's the answer displayed. If you were to describe what TMA is in your learned opinion, is it more of an exact science, or what is it?
A. It's really--its not an exact science--every parameter--when you start out as I said--said several times I think it is an imperative process, when you first gain a contact you know very little about it. You start with a guesstimate of what its range may be based on the sound conditions, you start with a closing solution, you may have some ideas, well it sounds like a merchant, most merchants run at this speed. Then you start with that kind of speed. Right now you're uncertain regarding if that contact is fairly marked, although the solution presented there shows a discrete bearing course, speed and range.

The TMA process is specifically designed to start to reduce those uncertainties to a tighter and tighter value, closer and closer to accuracy. The Officer of the Deck--that is part of his job, part of the Fire Controlman's job, what is the accuracy of this solution. There are actual procedures and the operation of the fire control system to provide discrete estimates of the accuracy of each of those parameters, it is called sensitivity analysis and the way you do it is you just hold all other parameters the same and you vary, say course, and you see how far you can vary course, if the solutions still fits or doesn't fit and you can get an estimation.

Q. I have known you for a long time, I know your tactical expertise, and you certainly have managed to describe this as being straight forward, simple process. Sometimes I have to play out in my own mind that I have done for years myself and you get where its more art then science, a lot of it is experience. But for a typical submarine crew that doesn't have someone of your caliber, or someone like myself who was in command for about five years. The typical--what's on the ship, would they have that sort of expertise that you're talking about? Is this graduate level or is this what you consider normal team knowledge on a ship?
A. What we're discussing here is--I think is normal TMA knowledge. I mean there are--in an Officer of the Deck's maturation, he may start out with some, you know, some basic skills. He may need--he'll get better over time. In other words, he will start recognizing indications of how to drive the boat optimally some indications of what are the best--what may be happening with a contact. He may be more proficient at his mental analysis, so things will become more efficient, but before an Officer of the Deck is qualified, before Fire Controlmen are qualified, they have a baseline level of knowledge on how to do target motion analysis, this is a centerpiece of basic Submarine School and pipeline training for the Fire Controlmen and the Sonarmen.

So, I think there is a fundamental level and as an Officer of the Deck becomes more experienced and moves up the line--certainly before--you know, at prospective XO School and at prospective Commanding Officer School, these principles are emphasized again and again and clearly people become more experienced and more able to do analysis quicker in their head and sort of recognize what are the best courses to steer and how do I resolve the solution faster, but--basically to qualify Officer of the Deck on a submarine, you have to be somewhat proficient in doing this type of analysis.

CC: Thank you.

Questions by a court member (RADM Sullivan):

Q. Captain, I want to again refer you to this point in time on the time range chart on the right hand side of this slide. And we were talking earlier about the Commanding Officer and the Officer of the Deck having a responsibility to check all the different sensors that they have in the Control Room, but for all we know, the Commanding Officer and the OOD did check this fire control solution and if they did, it was telling them that they had a contact at 15,000 yards and one that was opening. Isn't that right?
A. That would be correct, except as I pointed out, the Fire Control Operator obviously came to a conclusion based on the--and we--on this, this leg right here--these dots [pointing laser at exhibit] that came up after time 1332--31, which is right in here, coming right down this line, right in this area. Depending on when they looked, these dots here would have forced this solution to not fit anymore, so if they looked at the--I'm talking about the MATE display, which was presented to the court over at the training center, they would have seen the bearing dots not matching up with the projected solution and that that solution presented there was no longer accurate.

Q. So, I think this is kind of critical, so if the AVSDU was working, they would have seen this in the Control Room, and that would not have correlated with the picture they were getting if they were looking to the right to starboard in the Control Room at the fire control display?
A. Let me explain this better. If this--if the AVSDU was working, I would expect most, most ships--the Captain and the Officer of the Deck would probably be focused on the AVSDU during this maneuver. And they would've seen--probably seen some of this right bearing drift right there [pointing at laser at exhibit] on their screen and said, “Oops, that's an alert, that contact looks close,” and they then would have gone into further over to the--you're right, to the starboard side and delved into the fire control system to resolve that situation.

But with the AVSDU out, they sort of had an obligation to go elsewhere to get this data. They could have gone to Sonar and seen the same picture, it also would have been presented on the fire control screen. One of the screens, most likely is up--commonly up, is the time bearing display on the fire control system, which would have shown these same bearing drifts to the right and if mate was displayed--if you looked at this mate display, the bearing difference dots would have not--no longer been zeroed. It would have been going off and they would no

longer be straight indicating that the solution--this solution was inaccurate and it would have, again, set off the same alert that we need to delve into this contact further.

If they had just looked at the parameters and not done any critical analysis of the accuracy of that solution--they just looked at zero-two-four, 15,000 yards, speed 11, they'd say, oh that's safe--and not looked at any of the supporting evidence, they would have come to the wrong conclusion, but in my mind they are obligated to look at the supporting evidence.

Questions by the President:

Q. Captain, a follow-up question. There's been a lot of scrutiny on the Fire Control Technician of the Watch's data and the importance of that data--particularly at time, I think 13:33, 34, 35, but what you've just described to me tells me that one of the key issues out there was this right bearing drift, so it seems to me we should be placing a lot of scrutiny on the Sonar Supervisor. We should be placing a lot of scrutiny on the members of the watch team that were working the sonar--the panels--the displays.
A. Certainly.

Q. And, we should be putting scrutiny on the Executive Officer who apparently was in and out of Sonar at that time and I assume--I assume, based on what you've just told me now that here's an officer that's qualified as a submariner for some years, understands the importance of what they are about to go do, is adjacent to the displays that would allow him to understand that there's something else here that we've got to pay attention to and that there's an expectation, is what I just heard from you, that he'd be doing that.

It was also an expectation by any officer on the Conn; whether it is the Officer of the Deck or the CO, who are both acting in a capacity, I think, of conning the ship--without specifically--the Officer of the Deck, I assume had the Conn as well as the deck. The CO was acting in a capacity that I'd expect a CO to act, but they both had an obligation to seek this information.

So, we need to scrutinize a lot of people here on this one, because it seems to me this information--any of these things whether it was the right drift or this one range solution--seems to me like this disburses this requirement to go look at these

people and it doesn't just bear down on one particular watchstander with the range information.
A. Sir, I would like to go into that further. I had some other slides to discuss this, but attributing to the problem here, this--I agree with you, sir. In a normal condition, you would expect the sonar team to be engaged, looking at--when the Officer of the Deck passes the word on the MC circuit, the announcing circuit, to make preparations to go to periscope depth, submariner's minds switch. We now go into contact analysis and focus.

Q. Your threshold of sensitivity or what--that's what I think you're telling me?
A. You're--that's exactly right. You are trying to establish a safe envelope around the ship that--say there are no contacts that are threatening the ship for collision and that goes across this entire team, from sonar to fire control, the Officer of the Deck, everybody switches modes from normal steaming mode to an approach to the interface and everybody just goes into another mode of operation.

In the scrutiny of looking at the sonar and the sonar displays and what was available. Now, what comes into play is the--the way the ship is driven to give Sonarmen the opportunity to see enough data there to draw a conclusion from what they are seeing.

Remember that Sonar has no direct analysis equipment to do target motion analysis, they are looking for hints that might fill in pieces of the puzzle. They may come up with a range, they may come up with a speed, but there is no direct analysis equipment that gives them course, speed, bearing, and range. They are doing their assessment primarily on mental analysis and training and if they see an indication of a close contact, they are trained to recognize that. They're obligated to call that out and say, "I think this contact is close," but is there enough data there on the screen to make that conclusion and that's really a question that needs to be fully explored I think.

Q. But to make a conclusion that could be one of--here's parts of the data; bearing, speed--you know, that goes along with TMA or to make the analysis that this guy could be a problem. To me, those are slightly different thresholds. One's a clear indication that I know exactly, I've got a piece--I can describe this contact very accurately. The other one is that I think--you know, we are about to go to periscope, my threshold has just been raised. I want to make sure I am describing this accurately to understand, but does that indicate that there's another threshold out there that we ought to be sensitive to contacts that may be near. Is that what they are trained to do?
A. Yes, sir, absolutely, absolutely. They are looking for close contacts. They are listening around the ship and they are trying to find any indication that one of these contacts may be close and threatening.

Q. Just to close that thought. Listening to what you're saying again, playing against my own experience, when you decide you have a relatively good feel for a contact--and certainly you don't have a perfect solution to go to periscope depth, but you have to have one that you feel confident you're safe. You don't--what do you rely on to make that? Is it a single piece of data, one display, or what is it?
A. No, it's an assessment. It's overall--overall data. It’s the entire picture. You look at multiple legs--when I talk about a leg, I'm talking about--an easy way to describe that is the submarine is more or less obligated to look at every contact from two different views. Each view being called a leg, that is a leg of data. One batch of data with one setup, one view of the contact and then they're obligated to change that view to resolve the contacts, so you're trying to look over the multiple leg--you may have more than two, you may have three or four legs on a contact. You're looking at the overall picture over time and that's where these long time history displays are helpful in that regard.

You look over the entire period that you've held contact on the target to try to make sense of what's happening and you look at the sonar display and you look at the fire control solution and you see is that reasonable, does that make sense with my own mental analysis. You are trying to engage all capabilities, your mental, and machine, to come up with an answer that convinces you that it's safe to go to periscope depth.

It may not be, as you say--stated, an absolute, accurate solution, but you have enough data to say, well he's at least this many thousand yards away and he's on this type of

aspect--he's opening or we are going in the opposite direction and there's no way this contact is going to close in on me before I get up to periscope depth and can observe the contact visually.

Questions by a court member (RADM Sullivan):

Q. So, I've heard you say integration time a number of times this morning. Yet to me, even the guidance that's in the NWPs--and it is guidance, direction from the Commanding Officer's Standing Orders, there are things about time. You know, approximately 3 minutes--approximately whatever. That seems to be--and I'd ask for your opinion, a key--the guidance is to allow you to do this type of integration, to get a solution that you have some validity in.
A. That is correct and why you need a couple of things really to help the process. The machine, for instance, will take out own ship’s components of the relative motion plot and it will--it can analyze through the fact that my ship is still maneuvering or changing speed and will take out--cause its fast and it can take out and its processing the effects of own ship’s maneuvers, but the human brain is not as facile to do that and so its—to do a mental analysis--you really optimally would like to be on a steady course, a steady speed to observe the contacts bearing drift and to look at--to assess what the real bearing rate change is on that particular look, you'd like it to be steady and you want enough data there that you're not subjected to bad tracker data.

I mentioned that yesterday. The tracker, sometimes it's a--it's a mechanical device, it’s a machine. It can track off a little bit, you want to have enough data to have confidence that the data is consistent and reliable and that all takes a certain amount of time. You need to get the ship steady. You need to have enough integration time to let the contact situation develop, so that you can make a proper assessment mentally to compare it to what the machine is coming up and to come to common agreement--that we have an estimation of where this contact is. If you try to compress the time too much then you start losing accuracy and you make--make an improper conclusion.

Q. Because my instincts--when I skim through this is when you press the clock, in the back of my head, was always, you run the risk of your solutions are--are just not going to be as good as they could be.
A. That' correct. You lose--as I just said, you lose precision. You may make an improper conclusion.

Q. It doesn't mean it's not the right thing to do, but its just something you have to weigh?
A. You have to keep that in consideration, that's correct. That's--you know there's always--and I think ADM Nathman was talking about that, your thresholds go up when--you know, operating a submarine in any condition under any circumstances under water is a risky event. You know you got a big ship, a lot of steel, a lot of people under water, and if you ask the average public person you would say, is that a risk free event? Absolutely not, there is risk involved in going to sea, but when you decide to go to periscope depth, the risk goes up a notch. We are going up toward the interface, we're pretty--we are in our own environment while we're deep and it is pretty safe down there. It's not--there's not many things--there are hazards, but relatively speaking, its relatively safe compared to going to periscope depth. The risk factors go up--the obligations to mitigate those risks go up as well and you have to spend the time required to make sure that the risks--you know, risk is under control before you go up there.

Q. Just for a background question. When you discuss--or you talk about mental analysis--it's been a long time since I've had to do this, but for my other court members, can you describe just in brief detail what you are talking about?
A. I'll try to do it so it is not too mental, but it's hard--sometimes difficult. What we do--we have--we are trained on the principles of relative motion and it really goes down to a line of sight analysis. You are trying to look at--draw conclusions--if we could forward two slides, I can give you the example to answer the Admiral's question.

[LCDR Harrison did as requested.]

These little pictures on the side [pointing to line of slight diagramson] are what you kind of visual and mentalize--you can--you have to--you are trained to do this sort of mental analysis--draw these little pictures, start to form those in your mind as what is the contact doing?

For instance, on this situation where the contact is drawing--lets take a hypothetical situation. I look up, I see a contact drawing right at a fairly good rate, this little diagram here is what you--what you construct in your mind. I'm on course three-four-zero, the bearing to the contact is zero-zero-zero, and he's--I don't know this arrow. I'm trying to formulate this in my mind. Where could this arrow be? And in this case we know that--we know the solution, but this is a hypothetical case. I

don't know this arrow, but if I see this high bearing rate, a right six, I would pretty much automatically say, well its--there is a possibility he could be coming this direction and I'm driving that bearing rate right six, but it is pretty low and I would probably say most likely the arrow is coming this direction someway. I don't know if its pointing down or pointing this direction or pointing to the right, but I know probably he's going the opposite direction than I am, and you go through this process.

There are actual formulas that can say, based on a right six, you can make assumption with respect to my speed and his speed and you come up with some ideas what the range could be. There are formulas we are taught how to make those calculations, simple--simple division problems. The second maneuver after I change the course at this--if this contact does not change course and its near zero bearing rate, and you say that eliminates this possible, he could not have been going this direction. If he was, my bearing rate would be going to the left and all of a sudden I say, well, he has to be in this direction and my speeds, I have to be the same--this component and this component have to be the same to have the bearing rate be zero.

So, you go through this process in your mind. I now know he's either this way or he's that way, speeds matched and I have a pretty good idea of what the course is and I can do some range calculations that say the range is about this range. That's what we do and that is taught at Basic Submarine School, it’s taught to the FTOWs, its taught to the Sonarmen. That's how we do mental analysis. Does that answer your question, sir?

MBR (RADM SULLIVAN): Yes, it did.

Questions by the President:

Q. Captain, as a follow-up--I'm not a submariner and I--but I do understand your calculi and your--you know, I think understand what--obviously you have a way of training that builds in--your receptors go up, your thresholds change--you've talked about thresholds changing for going to periscope depth, you have to be more careful.

One of the things that I want to understand--I do understand what I call constant bearing--constant bearing to a Captain on the surface means you could be in real trouble cause constant bearing decreasing range means you got a problem, you got a

collision if you don't change it. You've got to change it. And what I see in this one here is constant bearing. Now, I don't see decreasing range, but what I do know from the analysis is this implication of increasing signal-to-noise ratio. So does that become--is that something--in other words, if you knew that you had constant bearing and you had increase in signal-to-noise ratio, is that the same analogy to a----
A. Yes, sir. In fact--in fact, we even hold constant bearing as being a tripwire as well. A tripwire to a potential close CPA. CPA--closest point of approach. We are looking for that as an indication of trouble of close--close quarters. The same as--same principles apply underwater as above water--the same things that you're looking at. In a normal encounter at long range, you could have--you could have a zero bearing rate situation and two possible conditions. One where they are in closing--a closing aspect like this one, where this situation indicates collision is inevitable if you keep this--if you keep this orientation, these two vectors will end up at the same point, at very close quarters.

The other possibility is he could be very, very distant, maybe 40,000 yards and his bearing rate is just very slow and it--it is slow to develop, but in those situations, long bearing rates like in long range contacts there will be a bearing rate over time, it may be very slight but he'll draw away eventually. You have to look at it over a longer period, but you'll recognize that he's moving--he's a long distance contact.

Furthermore, the long distance contact as I maneuver my ship, he won't change. In this case, it will change and you'll see that the contact is close, so the combination of SNR, the reaction of the bearing rate to own ship’s maneuvers--all those things would indicate zero bearing rate. In fact, if we have a zero bearing rate situation and someone calls it out and says, “Hey, Sierra 13 has got a zero bearing,” and has had a zero bearing rate for 10 minutes, he may be closing contact. I would expect that is a good indication--a good stimulus to say let's take him across the line of sight and check him for range to see how far away he is. That would be a good approach--that would be good Target Motion Analysis.

Q. Well, Captain here--this is why I went back to that--I want to go back to my question about who else we should scrutinize. We have this thing about this late fire control solution and that being kind of a tripwire and we've heard a lot of comments on this, but this is all in Sonar. I mean you've got sonar--you've got a Supervisor of the Watch in there, I assume is very skilled, he's on the watchbill, he's got a lot of experience. You've got two Sonar Technicians, ones--that are on the watch. One is on one panel, one is under instruction not properly supervised--we are still figuring that one out, but between the three of them, but certainly between the two qualified guys--they know they've got a constant bearing contact for a period of time now that looks to me like 2 minutes.

That looks like it's a clear--you're not in the turn, you've stabilized but--so in a sense, their antenna--their sensitivity should be elevated. Now, their sonar has got a constant bearing contact. Although it's for a relatively short amount of time, but they're in very critical phase here, I believe, and they know they have decreasing--or increasing signal-to-noise ratio.
A. Yes, sir.

Q. Now put it in perspective for me will you? Now take me back to that room and say----
A. Those are all key--key things and let me just--just to take the other side for a second--let me put some other mitigation in there. Commander, if we could go to number ten--slide number 10.

ASST CC (LCDR HARRISON): Which way is it?

WIT: [Gesturing.] Just keep going, just keep going. This one. This--this is a plot of all the contacts that the sonar--this is a Contact Evaluation Plot. It shows time along this left side, it shows all the contacts being tracked by the sonar system on the ship at that time and that day. Reconstructed--we took the sonar logger data and basically back generated a Contact Evaluation Plot, this is Sierra 13, and you see that zero bearing rate and then you have some tracked off time and then this little segment of right bearing drift. Go to the next slide, please.

[LCDR Harrison did as requested.]

This is just the top of this plot. This [pointing laser at exhibit] picks it up here and then this little right bearing rate and then back to steady again. This more or less

replicates what they would have seen on their display in the long term history portion of the sonar display that I showed at the Training Center. And he would--you could make a case that says, "Well, I don't know, maybe that was tracker drift." Maybe it didn't--maybe the tracker tracked off a little bit, but it's back on its normal zero bearing rate. Solution? It looks like it maybe a distant contact. We've maneuvered across the line of sight. It's back to zero. It's almost the same bearing rate as it had. Now, remember, you don't have this part yet [pointing laser at exhibit], so it's not that inconceivable based on this very short leg that they could say--they could kind of dismiss that as being--maybe that's just bad track during this maneuver, and that's what I'm trying to get at is that time would have helped tremendously here. A little bit longer time on that three-four-zero leg would have made it clear as can be. That, in combination with the zero bearing rate follow-on, would have locked the solution immediately. We would have known everything there is to know about Sierra 13.

So to say that the Sonarmen--that's something you'll have to come to grips with honestly, is that should the Sonarmen have picked up on the fact that this guy was close, and there was indication of rising SNR, and the bearing rates changing, you could make a case and say, "Yes." But you could also say there was this other data displayed that would say, "Well, maybe he's far away." Should they have raised their hand and said--called more attention to this? This may be a close contact? In hindsight, you would say, obviously you should have spent more time doing that, but I can kind of understand also why--why it didn't leap off the screen here at them. [Pointing laser at exhibit.]

Questions by a court member (RADM Sullivan):

Q. Just to follow-up on the Admiral's questions about Sonar watchstanding. You are again the Force Training Officer, correct?
A. Yes, sir.

Q. Is it fair to say that your knowledge of watchstanding in the Sonar spaces is good--knowledgeable?
A. Yes, sir.

Q. In prior testimony, there were discussions--there was some discussion about the common waterfront practice of having one of the watchstanders in work share on passive broadband being under instruction watch. I assume that his oversight watch is the--is either the supervisor or the other operator. Can you comment on that?
A. Yes, sir, I can. I was very--this came to light during our interviews of the Sonarmen during my National Traffic Safety Board role--investigation role, and I was very upset by that--kind of bothered. But he--let me explain what I know about what really happened in the Sonar Room, so it's clear. The fact is that the petty officer or the Seaman on--the operator on the workload share was not a qualified operator, but the fact of the matter is there was a fourth person in Sonar. STS1 Reyes has come into Sonar to pick up his jacket. He is a qualified operator and he came into Sonar just prior to the peri--the time the ship was getting ready to go to periscope depth and recognized that factor and in fact, he stationed himself as a watchstander behind the Workload Share Operator. In his testimony to our--the investigators at the NTSB, he described a situation where he became very engaged with the contact analysis.

In other words, it was not just a casual stay behind. He did engage himself in the analysis of the contacts. And I--I think that was an up check for this young--young fellow. He recognized that this guy sitting here is not a very experienced operator, I'm going to stand behind and make sure that this goes right. And the reason I know that he was engaged is because in the process of going through the reconstruction of the analysis, it became, I think, clear to him that Sierra 13 was, in fact, the contact. He didn't real--he didn't believe it when he came into the interview. And at the end, when he kind of came to the conclusion on his own that Sierra 13 was the EHIME MARU, he actually lost his composure. He broke down and felt very bad, obviously, that he missed that contact. So, I'm absolutely convinced that this petty officer was engaged in the situation. He was a player in there. So, technically there were two qualified operators, plus a supervisor, through no fault of the plan or the watchbill or the situation, it's just because Petty Officer Reyes happened to be coincidentally in Sonar. Now to get to your question----

Q. Before you leave that, he wasn't directed to take station was he?
A. No, he wasn't. He did that on his own.

Q. By the supervisor or the Executive Officer or anybody else?
A. No. My assessment of the interview was--no, he just did that basically on his own volition and his own sense of obligation.

Questions by a court member (RADM Stone):

Q. Okay, Captain, would he logically then--or have knowledge of the changing signal-to-noise ratio?
A. He probably did not. He did not have this long time history he just kind of stepped into this problem underway. You know, in the middle of the story, but he is doing--he picked it up while they're doing the baffle clears and steering around, so he was looking at the contact motion.

And then, I got into this issue about talking to the Sonar Supervisor. In his interview he said, "Oh yeah, this is common practice. We have these unqualified guys in here, that's how everybody learns." And I said to myself--I was very--I was not a happy--I was not happy about that answer because I am responsible for this area of submarine force training and maintenance of the Sonar watchstations, and so I did some independent investigation.

First of all, I found out--just to reassure myself that there's nothing written about this that would allow to occur, both the NWP, Naval Warfare Publication for operation of the sonar system and the Standard Submarine Operations Regulation Manual, both specifically say that no unqualified--only qualified personnel are allowed to be stationed on a watchstation. It's very clearly spelled out, there's no ambiguity there, there's no footnote, except for, or any of that for Sonar. Only qualified operators should stand-on the consoles.

So, I wanted to find out if there was sort of a waterfront practice that was going on in this vein. I called two--several different people--two different groups of people really, the Command Master Chief level folks that assign and write the watchbills--filled in the names of people who are supposed to stand watch--fill up the watchbills, and asked those folks--I said, "Is there any practice on--I didn't tell them the background I just wanted to--I kind of didn't introduce the background, it was sort of an unprompted question, "Is there any practice which, you know, that the watches can switch themselves in Sonar at the discretion of the team. Can you put unqualified people on the consoles?" And none of the Master Chiefs--Command Master Chiefs—COBs, that I talked to said--"Absolutely not.

It's not allowed. You have to have a qualified watchstander in the station." Then I talked to my--one of my Sonar Inspectors. I mentioned I have this Underway Evaluation Team, that Code 70 Group that I discussed yesterday, and in there are some senior Sonarmen who do underway evaluations of sonar--Sonar watch sections. And I asked one of the inspectors that I have a great deal of confidence in, "What's the status on this? Do you ever find situations where unqualified people are sitting on the consoles when you do your underway evaluations?" And he said, "Yes." He said, "I've probably found out that about 20 percent of time. I point it out immediately as a problem and we get it corrected." So, it's--it is an issue that I have to come to grips with. Twenty percent is not adequate in my mind. It should be zero percent, but there is apparently some sense among some of the ships that it's okay to have a nonqualified watchstander. But it' not--there's nothing that condones that policy in any of the things that we have written. It's not a stated policy in the submarine force that's for sure.

Q. When you said 20 percent, was that bias toward a given squadron?
A. No. He said----

Q. Or any configuration?
A. He does not--he couldn't--you know, he said, "This is a visceral calculation. I don't have--he didn't have any distinction on any particular squadron or any unique boats of any kind. But he said, "I've probably caught that around about 20 percent of my rides," and he rides many ships on all squadrons, both here in Pearl Harbor and in San Diego, and up at Bangor.

Q. Okay--
A. So, he rides across submarine force wide.

Questions by a court member (RADM Sullivan):

Q. Alright, let me ask you a follow-up question, Captain. Well, you've got an experienced guy that's part of your training team now that senses that there's members of the force using an improper method for manning watchstations. Did he get on his circuit--you know, his Chief circuit--did he go back to the Chief of the Boat? Did he go back to senior Sonar watchstanders? Did he provide feedback to the squadrons? Did he try and close loop this at all or just now that it became an issue is this what his reaction was? "Well, I think we've got maybe 20 percent of the force out there maybe doing this wrong?"
A. We--I don't know that he--I didn't ask that question about "how far did you take this issue". I was really more interested in the immediate answer at that time. But it's--the way that's processed--I mean that's brought to the Senior Team Leader right there on the ship immediately as it happens and they--this group holds--just tell you what they do--I don't know whether this issue was really brought up at this thing, but they hold seminars and group training exercises that disseminate common problems that they see on the various ships they ride. There is a process by which that--those issues they find are disseminated. Whether or not this particular issue was disseminated at any of those training sessions or--we also put out messages that talk about common problems to all the boats. Whether those have been discussed? I'll have to get back to you on that, sir. I don't know. I'll have to follow-on question on that.

MBR (RADM SULLIVAN): I would appreciate that.

WIT: Those two--both my sonar team people are underway this week doing training. As soon as they come back from sea, I'll ask them those questions.

Questions by the President:

Q. Captain, I know I'm kind of drifting away from the counsel's testimony, but while I have you in Sonar--we've got some discussion here about the use of the sonar work tape--the one-quarter inch tape recorder I believe. Can you tell me what that is really used for?
A. Well, it's no longer one--it's different than a one-quarter inch work tape. Sir, I hate to tell you, sir, but the system that you're familiar with is long gone. [Laughing.]

PRES: Thank you for that comment [laughing].

WIT: We do have--nonetheless, we do have a work tape in Sonar, and this work tape is used for if something of interest occurs--if you--something happens that's of interest you would like to have the ability to replay and listen to the event again and to capture that event on tape, so that it can be used for further analysis. In this case, the work tape system that was used on the--would normally be used on the ship to the best of my understanding, again through the NTSB investigation, this work tape system was being used to be play back ocean sounds for the visitors on the ship that day. And although there were no visitors in while they were going to periscope depth or during the actual period right prior to the collision, they had stopped the tape, but had forgot to reload a follow-on work tape to start the work tape process again.

Q. But, as a senior submariner if you walked into a Sonar Control space and saw Sonarmen using this tape recorder as a demonstration for sounds of the whales what would be your reaction?
A. I'd say, "Why do we have this distraction going on in the Sonar Room, Number 1, and what are you using as a work tape?" You need to have a work tape going. It's--I mean there are periods of time when you are cleaning the heads on that recorder--I mean you don't stop the ship if you have to take that system down. It's not a critical--you don't operate--if the system goes down you cease operations. It should be running. It's a standard watchstanding practice, but if there has to be maintenance done on the tape recorder and everything else it's not unusual to have it offline for periods--short periods of time. But you should not be operating in a--for long hours without a work tape going.

Q. Okay, thank you. To follow-up on the issue related to the 20 percent or the anecdotal number for the watchstanders that may not be fully qualified. If in fact, the command makes a decision to go down that road and not meet the requirement of the totally qualified watchstander, do you think it's fair to say than that making that decision by the command incurs increased risk to the operation of the ship when you make that decision?
A. Yes, sir, it does. Clearly the reason--rational behind in having only qualified people on watches is you want to make sure that the--they know all the information they're supposed to know to operate that console. Now, I want to put this in proper context that all the watchstanders on the panel, operators in Sonar, are all under the direct supervision of the Sonar Supervisor, so if in any place, and I'm not condoning this at

all, if at any place the risk is less of having a nonqualified person, I expect would be say--I'm not really saying this right, but all of the operations of those four panel operators are under the direct su--observation of a direct supervisor.

It's a different situation if you had somebody operating the diesel by himself and he was not qualified at all. I mean that--the seriousness in my mind of an independent operator around the ship being nonqualified is higher because there is direct supervision here, but I'm not condoning it, it's not right. I'm just telling you that if there is inappropriate action by this operator, it would be caught by that supervisor, and if he's not doing his job right, the supervisor would get him out of the way or move him out and get somebody else in there, so it's sort of a--this is a directly supervised watch by a senior Sonarman.

Questions by a court member (RADM Stone):

Q. With regard to target motion analysis, the submarine force in fact, taught the surface Navy when we received our towed arrays or 19 arrays a lot of lessons about Target Motion Analysis. Because the submarine force, I would think it's safe to say, is one of the world's leading experts in the art and science of Target Motion Analysis because of the medium you operate in, would you not agree with that?
A. Yes, sir.

Q. The--one of the lessons that would frequently be reinforced onboard our ships was this issue that was raised earlier by ADM Sullivan, is the relationship between time spent on the TMA leg and the quality that you would get. In other words, if you cut the time short, the lesson that was constantly reinforced was that you're going to be affecting the quality of the product. Could you say a few more words about that relationship between time on the TMA leg and quality?
A. There is need for both the mental backup and the machines that do the--target--machine assisted Target Motion Analysis to make sure that you have consistent tracking data. In other words, you need to be able to look and say that the data that I'm receiving for analysis is consistently honest, it's not subject to excessive data scatter. For instance, if we go back to this SNR comment. If the SNR are low, the ability for the tracker to stay on the target is degraded. It may hunt back and forth across that target, so if you just looked at two sonar bearings, two dots, and this tracker is hunting back and forth across the contact, you could make an extrapolation between

those two dots for bearing rate that would be inappropriate because they're wrong, they're on edge of either side of the sonar contact, but if I have a string of data, maybe 10 dots or 15 dots, you can fair through with your eye or the machine can fair through with a cursor the real trend of those dots. You take out the scatter, the noise of that--that tracker. Clearly in towed array system that's even more of a problem. The trackers are not as accurate. We're not dealing with towed arrays here, this is a spherical array, which has very good trackers in it.

The longer you have the more assurance you have the data you're looking at is consistent and reliable and high quality and time is required to make that assessment. The amount of time required is depending upon the situation. You need to make enough data there to convince yourself that the data you're looking at is real and accurate and that the bearing arrays are real and accurate. If you have strong SNR, you might make that conclusion in just a couple of minutes. If you have weak SNR, you may take 5 or 6 minutes to get the good bearing rate, that's what we say with towed array analysis. Spherical arrays, you've heard 3 minutes, but by my displays and we talked about earlier today, with towed arrays our thumb rule is a minimum of 6 minutes, because the bearings are not as stable. Towed arrays are not effect on this particular incident, but it really is dependent on the sensors you're listening to and conditions you're encountering.

PRES: Counsel of the Court?

Questions by Counsel for the Court:

Q. Captain, I'd like to backup a few slides to the USS GREENEVILLE parameter slide. Captain, would you describe for the court what this diagram [pointing laser at screen]--what these charts depict?
A. This slide is generated from our reconstruction analysis equipment. Basically, once we settled on a reconstructive track, which we discussed--basically slide one from yesterday. Once we have that data in the machine, we can ask the machine to print out slides like this. This is re-constructive data based on the reconstruction that I--pretty much as being very good--the first slide I showed yesterday. It shows three different plots, obviously, time across the bottom. Time scales are consistent and this basically shows you a picture of USS GREENEVILLE'S course over that time between 1330 and 1344. This shows the speed over that same time interval and this shows the

depth of the GREENEVILLE. This is really taken from the ultimate source of all this data again is the sonar logger data. You can see that on this--that's basically what the slide depicts.

Q. What I would like you to do, sir, if you would. Could you take us through the three-four-zero leg, the time the GREENEVILLE spent on the three-four-zero leg and discuss course speed and depth?
A. Yes, I can. The three-four-zero leg is depicted from here, you see zero-zero-zero this three-five-zero and three-four-zero is right in here [pointing to screen], that is the three-four-zero leg right there. You see it came down and looks like about time 1331 and 40 seconds and lasted till time almost 1333, maybe 20 seconds.

Q. So, she was steady on course three-four-zero for how much time?
A. A minute and 25 seconds steady on course.

Q. Would you now go to the speed slide and discuss again for that same time period. Was she--what was her speed?
A. Her speed was ever decreasing. You see, it never really stabilized during any of this period of time that she was steady on course three-four-zero.

Q. And from what speed--from her highest speed to lowest speed during that time----
A. It starts out about 18 knots and drops down to somewhere around 10 knots during the time she was on three-four-zero.

Q. Okay, with respect to speed, Captain, what would be optimum or the acceptable speed for conducting TMA?
A. Generally, you like to go a steady speed. Actually the higher--the best speed you can make and still track the contact is optimum because you can drive the highest bearing rates with the highest speed. If you can--10 knots is generally a speed we try to go with--go a little faster--a little bit better. We usually go 10 knots. There's another factor here that comes into play. You see on the depth scale there coming up to 150 feet, which is the normal launching point from going to periscope, as you go up to 150 feet, the faster you go, the more likely you are to cause cavitation and a lot of own ship’s noise, and that's considered bad practice. We try not to cavitate, make unnecessary transients in the water. So, we typically--a good speed to do this is 10 knots, maybe 12 maybe 9--something like that is a good speed to steady at.

Q. Speed is important because----
A. It aids in your Target Motion Analysis.

Q. Why does it do that? Why does a 10 knot speed--why is that better than 15 knots?
A. Actually, 15 knots would be a better speed for Target Motion Analysis, per say, the greater the speed the more you are going to drive the bearings and assess, do your ranging and so forth. The better it is for Target Motion Analysis, but 15 knots at periscope depth is kind of a high-speed and you're fairly close to the surface, you're going pretty fast at that depth. You kind of change course, you kind of cavitate, you make a lot of noise. Your margin for error in depth control is less--have a problem with your planes or surfaces, everything happens a lot faster at 15 knots than it does at 10, so 10 or 12 is sort of the normal upper bound cause you go to 15—probably, but you're not very comfortable up at that speed at a 150 feet.

Q. With respect to all three of these different parameters, course, speed, and depth, when you start your TMA leg, do you want to be--is it a good thing to be steady on course?
A. It's a very important question, because from the standpoint of the machine assisted algorithms--as I said earlier, the course, speed, and depth did not need to constant. TMA is going on and can go on nonstop through own ship's course and speed maneuvers. The fact is if we looked at that previous slide the fire control may have evidentially came to a good--a fairly good solution probably somewhere on this leg, while the ship was not steady on speed and course. Because the machine can work through those problems, but from a standpoint of mental analysis as ADM Nathman is asking why didn't Sonarmen see this or understand it.

The fact that this speed was coming down this whole time and that the course was steady only for a little over a minute and the ship was changing depth, which has some impact on the ability to sonar track for a short period of time, degraded the ability of the operators to do independent mental analysis of the Target Motion Analysis. It is an important plot. There is data on the ship that could go and come up with a conclusion, but it is the ability to independently verify the accuracy of that TMA solution presented in that fire control screen, which is degraded by the fact that the ship's parameters were continuously changing through that entire maneuver. I think that is an important point.

Q. Let me understand this. It takes away that interaction independent operators coming to their own conclusions and you basically are putting all your reliance on what the fire control system generated?
A. That's correct.

Q. You go down to a single point-----
A. That’s correct.

Q. Single point answer?
A. That's right. We do not like to distrust--as a submariner, I don't trust--I need to verify that fire control solution. I want to know that it makes sense. It correlates. It makes sense it conforms with my mental analysis, back it up, look at the time bearing display and look at lots of information to confirm that this contact is close.

I would certainly expect the Fire Control Operator who thinks I have a solution--its tracking at 2,500 yards or 4,000 yards. I would expect him to raise his hand and say, “Come over here and look at this,” and let the officers take a look and get the team playing on his--he's got an important piece of data here for the team. I would certainly expect him to raise his hand and announce that fact that would incur further delay--no delay, but it would require more analysis to say, "Geez, 2,500 yards, I need to--this is potentially serious," that's how you would like it to work and then you would stay there a little longer and look at the leg a little longer, watch it develop and come to the conclusion that, yeah, that is close or no, that was just bad data, it was a bad set of bearings. It’s not--it doesn't indicate he's close.

Questions by a court member (RADM Sullivan):

Q. Captain, you mentioned the fact that TMA occurs continuously, sometimes the quality is not very good and that's--speed, noise you're creating, the contact quality, are those maneuvers, etc, etc, but that goes on a lot. ADM Griffiths' testimony was very clear that he thought there was good TMA leg, but I took from that there was one TMA leg is what he saw--that would be the next leg the one-two-zero leg. Is your evaluation of all this stuff, is that consistent with what ADM Griffiths arrived at in terms of a TMA leg?
A. If I was to classify this three-four-zero leg, I could only assume in the mind of the folks driving the GREENEVILLE that they considered that leg one and I would consider that leg marginal, only because it's so short and it's not steady. Is there TMA being done? Yes, sir, as evidenced by the fact that someone came up with an answer that is pretty good. Is it a good TMA leg? Is it sufficient? I would say it's not sufficient. It's not sufficient to an independent review or analysis to understand the contact motion.

Q. What would you have wanted for it to be sufficient?
A. Several more minutes, and if I----

Q. Is that several more minutes steady on depth?
A. Steady on depth, course, and speed to make the situation obvious.

Q. Alright, Captain, then my next question is, I would like you to take a look at that three-four-zero leg and tell us how long GREENEVILLE was steady on course at approximately speed 10--12 knots and at depth 150 feet.
A. It was probably; there is 33, 32, 40, 30, 35 seconds.

Q. And those are the parameters that you would have wanted to see more time spent at in order to get at that solution?
A. Normally, 3 minutes, somewhere in that area, 3 minutes plus or minus, a little bit depending on--around 3 minutes is what we say is a good value and that is a good value to start with. Does it have to be exactly 3 minutes dot 0 seconds? No.

CC: Could we have the next slide, please?

[Slide forwarded.]

Q. Captain, I believe you have already talked through this slide.
A. Yes, I have.

CC: Could we have the next one, please?

[Slide forwarded.]

WIT: This next one shows that—what I did here on this particular chart was [pointing to chart], I blew up the reconstruction of the last few minutes prior to the collision. The collision happens, obviously, where the orange and blue lines cross. This is the one-two-zero leg and here is the three-four-zero leg and we're coming off of a high-speed transit here. It's kind of difficult to see on this depiction, but you can see this [pointing laser at exhibit] tick mark and that tick mark, and this tick mark here. They are very small on this, but those are 1 minute intervals and you can see that the space between the 1 minute intervals are getting smaller, which indicates, as the previous slide did, the ship is slowing down.

What I did was just extend this leg for 3 minutes, one, two, three [pointing laser at exhibit] and drew bearings to the reconstructed track of the EHIME MARU and came up with the bearing distribution, and if they would have stayed on this leg for the 3 minutes and just steadied out to three-four-zero, 10 knots, they would have developed an 11 degree per minute bearing rate over that 3 minute period to the right, that is significant, that would be as we looked on the display—-if you remember when we were over at the Training Center, we showed a contact at 4,000 yards per minute—I mean 4,000 yards away that showed like a 7 degree per minute bearing rate that was very obvious on the sonar display, it was very clear. The contact was breaking over to the right and very apparent to all the operators, all the sensor people would have an easy time with an 11 degree per minute rate. That was 4—I think it was 4 to 7 over there [pointing laser at slide], this would be 11, which is even higher, and if you really ran this out further and you kept going, this would go to a maximum of about 14, which is a fairly high bearing rate. I don't think there is any submariner that would not recognize that as being a close encounter, a contact that is inside a mile, a mile or so.

CC: Can we have the next slide, please?

[Slide forwarded.]

WIT: What I did on this slide was take the slide that you are familiar with already, the blue dot slide, the expanded time bearing, and I just basically plotted those orange dots to what this would have looked like on the display we have already seen if I continued on that three-four-zero leg projected bearings. You would have seen this thing would have continued to draw to the right at a very large rate and I think it would have been obvious to all the players on the ship that the contact was fairly close aboard.

Questions by the President:

Q. Again, it just sort of boils down--the ship on that given day had fairly good contact, especially the minutes leading up to the collision and you alluded to when you talked about it a half hour or 45 minutes ago, about how a big portion of TMA is--how good it is, is how you drive your ship. How you position it to generate bearing rates--to change bearing rates. So that first leg, if they had just stayed longer, it would have been a great leg to see what they needed to see, which was----
A. From a course standpoint, sir, it is excellent. It's an excellent leg to use if they would have just stayed with it a little longer it would have clearly shown the contact at close range. The problem is, they went then to a one-two-zero leg, which is a zero bearing rate leg and didn't really add much information in view of the long history as we discussed a little while ago. The long history it seems like, well, that's just consistent with what it has been over a long period of time and they missed out on this opportunity right here to see the really relevant information.

Questions by a court member (RADM Sullivan):

Q. So the course selection, three-four-zero, whoever that might have been to the Officer of the Deck, or with the help of the Commanding Officer, whoever might have selected, was a great selection. In other words, they had a great plan they just didn't execute, as you would like to see it.
A. Yes, sir. If you see--they're doing 10 knots, the contacts bearing when they went to--was roughly you know, is over at the zero-one-zero-zero-two-zero leg, when we--we're over here [pointing laser at exhibit] at zero-two-zero he has taken a course that's 40 degrees from the bearing of a contact. He has a 10 knot speed, that's a significant amount of speed going across the line of sight, which would--exactly what I was talking about in Target Motion Analysis; drive the bearing of

the contact to the right and would clarify the picture very quickly.

I can guarantee you if this had happened, the fire control system solution would have locked up on a unique solution very quickly. There would have been absolutely no doubt in your mind--everybody would have concurred right off the bat and said this contact is close, we need to stay down. We need to go to some other location. They made an alternate decision. I do not think they would have gone to one-two-zero to go to periscope depth, that is not a good course, that is not a safe course to go to periscope depth based on this analysis.

Q. What about the accuracy of the mental gym that as you alluded to was what was being done? What did they----
A. That would have been enhanced as well. High bearing rates, large numbers, and as formulae like 11's and big numbers like that make, those formulas work better and come to a more accurate answer.

MBR (RADM SULLIVAN): Okay, thank you.

CC: Could we have the next slide, please?

[Slide forwarded.]

Questions by Counsel for the Court:

Q. I believe, Captain, that you have already talked through the CEP plot slides. Do you have anything additional you would like to add?
A. This does show all the contacts that were being tracked by the GREENEVILLE on that day. It does show the SNR values on here--you see the, this was a question from yesterday [pointing to screen with laser] -10, -8, -0, -3, and it all depends on the speed the ship is having. Those are moderate, not weak SNR, but moderate SNR contact. Contact does go up in SNR right prior to the collision clearly and I will show that on the next slide, please.

[Slide forwarded.]

Again, this is the top half of that plot. You can see that this Sierra 14 contact--during my interviews with the Sonar team, became a center of some focus just prior to going to periscope depth. He emerges after--what appears to happen, this short leg, three-four-zero leg, does drive Sierra 13 a little bit to

the right, and I would say that most likely Sierra 14 was being hidden--masked by Sierra 13 during some period of time during these maneuvers. In other words, he was behind a weaker contact, behind Sierra 13, which is the closer contact and he came out and needed to be evaluated. Now, this evaluation of Sierra 14 was not very good. They had this one dot here on a three-four-zero leg with one X, maybe a couple sonar bearings and then they went to one-two-zero to go to periscope depth. This put this contact right on the edge of the sonar's baffles, making it very difficult to track that contact, so he's being tracked here, but he's very--that's a very marginal position to place Sierra 14 from the standpoint of tracking and getting further data on the second contact.

Questions by a court member (RADM Sullivan):

Q. Again, I'm probably showing my age, but putting a contact on the edge of the baffles or in the baffles, is that a good idea?
A. It's not a good idea. It's because, as explained over at the Training Center, there's basically a 120 degrees swath directly astern that the sonar spherical ray system cannot accurately track the contacts. The closer they are to that 120 degree quadrant, 60 degrees on either side of the stern, is a rough number depending on the elevation angle. The accuracy of the track, the tracker becomes less and less accurate as it's listening further and further behind, and so the track data that you're getting is less likely to be an accurate depiction of the bearing.

Questions by Counsel for the Court:

Q. Captain, just to clarify a point. This slide [pointing laser at slide] and the one previous to it are the reconstructed CEP plot, correct?
A. Yes, they are. We generated these by taking the sonar logger data and Deck Logs, and so forth, and generated this black line [laser pointing to screen], reflects what GREENEVILLE was doing, it shows what courses and speeds, this CC means change course to three-four-zero. This is a depiction of GREENEVILLE'S track. As the speeds here, the speeds that were going on, it says directed to raise Number 2 scope. This is basically a scrolled chronology of GREENEVILLE'S actions taken from the sonar logger data and the Deck Logs, and it also took sonar logger data and plotted each contact that was logged on the Sonar Data Logger, Sierra 12, 13, and 14 during the period of concern here.

Questions by a court member (RADM Sullivan):

Q. The reconstruction was done by your N-70 or N----
A. No, this was done by N-72, the Data Analysis Group. They took the spread-sheet generated by the sonar logger data and just put this plot together.

Q. Captain, after your reconstruction efforts, is there any doubt in your mind that contact Sierra 13 was the EHIME MARU?
A. No, no doubt in my mind whatsoever. Sierra 13 reacted--it shows all the indications of a close contact. You see that it [pointing to screen with laser], actually we could look at this on the next slide after this is even better blown-up. There are only two contacts really being tracked at the time where Sierra 13 and 14--if you go to the next picture, this is just a blow-up, easier to read of that same period of time. [Pointing to screen with laser] This is Sierra 13 over here, the blue or purple lines and the orange lines are the Sierra 14 lines. You can see that--oh well, again, this contact is starting out just at the edge of the baffles and you see the SNRs are low, that's an indication of bad track, it comes backup consistent with this bearing drift, once we get the tracker back on it. This contact on the other hand, Sierra 13--remember that own ship has come down, from--this is a zero bearing rate leg that we were talking about at one while its own ship was at one-two-zero. The boat now goes deep to 400 feet and starts to turn to the left, as he increased the speed going deep to 400 feet from periscope depth, that increase in speed alone is causing the bearings to drive to the left, just by the fact we've increased speed. This contact is reacting to own ship's maneuver. That's an indication that the contact is close. The SNR is going up indicating that this contact is again, another indication of close contact. It must be kept in mind that as we're going from the interface deeper, we may have better sound conditions as we go deeper, and that could cause the SNR to up on its own right. Then this very high bearing rate to the left, as we go by the ship at very close quarters and actually have the collision, which means we're driving right by. So there's no doubt in my mind that this Sierra 13 tracked here at the last few minutes, was the EHIME MARU. Now, will you go back one slide? [reviewing previous slide] It is very possible that in this phase, back in somewhere in here that Sierra 14 was in fact behind or masked by on the sonar display by Sierra 13, that here on the same bearing and presented onto the same trace on that sonar system.

Q. If they had detected Sierra 14 behind Sierra 13, what would you have expected them to do?
A. They couldn't--until we break it apart like that then you treat Sierra 14 as a brand new contact, and then you do the same analysis, as I said before, before going to periscope depth, you're obligated to understand all the contacts that you have around you, even if you picked one out, one became unmasked, you have to figure out is this contact close, far away, where is he, what's the relationship to own ship before we going to periscope depth.

Q. Captain, you mentioned the acoustic conditions in your previous testimony--can we go ahead a couple of slides? [Slides on screen changed and referred to] to be able to determine the acoustic conditions for the 9th of February?
A. Yes, I was. We took this data off the ship's recorded data. They record the sound velocity profile. The ship actually made a fairly deep dive during the day, so they had pretty good data, and then what happens is this bottom part that is not in the area, the very deep data on this chart, are merged historical data for that particular area. It's basically a fared through plot, but this top part was actually measured by the ship's sensors and indicates near the surface between 0 to 400 feet a fairly referred to isovelocity where this plot is depth on the left, sound speed on the horizontal axis. This indicates the speed is fairly isovelocity, that means the speed and sound is about the same all the way down to 400 feet. When you have that kind of condition, the sound basically travels straight, there's no bending. If you have a change in velocity, it tends to bend the sound waves in the direction of the slowest speed, and that's what these lines are trying to depict and the verbiage on here discusses it, it slows down the waves where it's deeper and where it's faster the waves go faster, say a higher speed it kind of bends them, sound toward them, toward the point of minimum velocity. But up in this area, where GREENEVILLE was operating, it's fairly isovelocity, good sound conditions.

Move to the next slide [referring answer to next slide on screen] We have an acoustic prediction model that we have a great deal of confidence in that shows the conditions or predicts the acoustic performance on a given day. And this black part reflects land, and it's on the quadrant, own ship is at the middle here of this pie diagram. And this 'V' here shows the direction that this plot is depicting, which is the area due north, the area up toward Oahu from where GREENEVILLE was and that's the area that the EHIME MARU was coming from. This black line indicates the bottom, so it appears the island itself, this

is the very shallow area right near the island, it's sort of stylized, it's not an exact depiction, it's a rough area, there's a shelf and then a deep area that falls away pretty quickly. This scale over here indicates the transmission loss along this line. The GREENEVILLE'S operating over in this area [pointing laser at slide] at zero range and looking up to the North you see that there's very little. This is from low transmission loss to high, the orange is good even the green is good, good transmission loss all the way up to the beach. You lose some, you know you can't hear quite as well out there at 40,000 yards as you can at close by, but you're still hearing pretty well. It's good sound conditions. Next slide, please? [referring to next slide].

And this is really the sound level excess required to hear contacts above the noise in the area, and the noise was not that loud, so you have good sound conditions all the way to the beach. There are no issues with some kind of bending, motion or some bending some weird sound conditions that would have bent the sound from the EHIME MARU away from the GREENEVILLE sensors.

Questions by the President:

Q. I have one--go back three slides or four slides.

[LCDR Harrison did as directed.]

This was the sonar drift rates, that one right there [pointing laser at slide]. Captain, you mentioned--this will be the last question then we'll take a recess. You mentioned that your boats are normally doing constant TMA and we have that one leg on one-two-zero, where we have that steady bearing that starts--if you can help me with the time? At the bottom of the chart, go to the bottom of the chart the first time, go to the left, I think that's time on the left, right?
A. Yes, 2334.

Q. Okay, 34, and then take me through the--when it starts sweeping to the left and you see a drift rate where it starts there. What time is that?
A. That's 2340.

Q. Okay, a little bit less maybe?
A. 23, yes, sir, 2339 and 1/2 or something like that.

Q. Alright, but now you're starting to see this analysis should still be going on, right? You haven't--this is what looks to me like you made the--you're doing two things, you're diving, you're increasing speed, so you get drift rate based on that.
A. That's correct.

Q. You get--if I get this right, you're now--you're going to start a turn there that changes drift rate----
A. That's right.

Q. So, you've got a Sonar Supe and you've got Sonar watchstanders now that have been able to watch this, what looks to me like now, as a lot more data?
A. Yes, sir.

Q. What should be the conclusion from that?
A. I would say that if you were really paying attention to this contact, you would recognize through this, this is about 2 minutes of data drawing to the left rising SNR, that would be an indicator that it's a close contact. This would also be depicted on the fire control screen as well to show that bearing drift to the left.

Q. I want to ask you now as an experienced submariner. I asked RADM Griffiths this, but it was the irretrievable nature of doing the blow. In other words, you're still maneuvering the ship up to the time you do the blowing and this is what I'm understanding right now. So, you put a turn on the ship, you change depth, you're still in control and at the same time you're still in control, it looks to me like there's a lot more data now available to the Sonar Operators. In particular, in terms about the knowledge they could gain on this particular contact. Once you do that blow, do you have any ability--you're going to go to the surface is what I understand, do you have any ability to change your course? I think you're probably going to increase speed because you're rising, but do you have anyway to influence the dynamics of where the boat's coming up?
A. Not really, sir. In fact, procedure says for the emergency blow, you want to keep your rudder at amidships for stability. You don't want to be turning at the same time you're rising at that speed for stability of the submarine itself. Basically, once the emergency blow is actuated, it's pretty much you're going to the surface on the course that you're going to surface on. From what I understand--my picture of understanding on what was going on at the controls at this point, once we went deep and we started the speed increases to 12 knots, we'd go to full bell. We're going down to 400 feet. The natural focus of the

Officer of the Deck, the Captain, perhaps standing at the Ship Control Party, would be watching the actions of the Ship Control Party executing this emergency deep. So their focus will no longer be over at the contact picture--their specific focus would not be over there at the contact analysis. Now, that doesn't stop the Sonarman or the FTOW from doing that work, but the focus of the officers on the Conn there would be now making sure this----

Q. The control is proper.
A. The control is proper, yes, sir.

Questions by a court member (RADM Sullivan):

Q. And, I agree with what you're saying just from my own experience, and I think what drives that is the fact that you've gone to periscope depth. You haven't seen anything. You got a visual search. So you're very satisfied or you wouldn't be doing the evolution unless it was cleared.
A. That's correct.

Q. But would it bother--again, we're talking not necessarily GREENEVILLE, but just in general. You go deep and start turning and generate a bearing rate like that for contact that wasn't seen at periscope depth in the evolution that was conducted. Would that be troublesome, the discontinuity to the Sonar Supervisor?
A. I'm sure that's a factor in his mind.

Q. So that's something we should ask him, I guess.
A. We didn't see this guy. How could he be this close.

Q. I mean, the fact that you kept him as a contact through an emergency blow to me means it was a very loud contact.
A. That's right. You can see what happened to this other guy. They were having a hard time tracking him through this emergency deep process, that's what caused them to lose track. He was going down fast and turning course. This is a weaker contact and it drifted off. This one [pointing with laser to screen] they tracked solidly right through the whole process. He's close.

So, I would guess, this is a surmise—I would guess that paradox is in the mind of the sonar people, we just went periscope depth, we looked around, we didn't see anybody, he can't be this close, but it looks close. I don't know what thought process was going through their mind there.

Q. Well, it wouldn't just be the Sonarmen? It would be----
A. All the people continuing the contact analysis process here.

PRES: Captain, we've got lots to cover today. Let's take a recess of court until 1000. This court is in recess.

The court recessed at 0943 hours.

The court opened at 1000 hours.

PRES: This court is now in session.

CC: Let the record reflect that all members of the court, counsel, and parties are again present. CAPT Kyle, if you would take a seat in the witness box. Again, I remind you you're still under oath.

[The witness did as directed.]

WIT: Understand.

Questions by Counsel for the Court:

Q. Captain, as part of your reconstruction effort, did you conduct an analysis of the effectiveness of visual searches at periscope depth?
A. Yes, I did.

CC: Could we have the next slide please.

[LCDR Harrison did as directed.]

Q. Sir, could you explain to the court what this slide depicts. I know that we've seen the upper portion, the purple dots in a previous exhibit. Can you tell us what your analysis adds to this picture?
A. [Pointing laser at slide.] This is a plot on the left hand side of the depth, ship's depth, as recorded on the Sonar Logger. The sonar logger depth is really a read-out of the Ship's Digital Depth Detector and it has that logged every second. This orange series of dots; yellow, orange, right on this scale over here, [pointing laser at slide] is the pitch of the ship, basically the angle of attack to the water. Also logged in the sonar logger, it's really the angle of the boat based the ship's navigation suite. It basically correlated in time relative to the ship's depth and sort of adds a little bit

of the story as to what was going on in the effort to control the ship’s depth, the periscope depth, which is sort of the first critical element in the periscope search.

Q. Captain what does it add to the story?
A. It kind of tells you a couple things about the conditions. First of all, everybody in the right frame of mind here, this gold line right [pointing laser at screen] here is zero pitch angle, which puts the boat at even pitch. Basically, no angle on the boat and that is a common--common pitch to periscope depth--the ship would normally be trained such that it was a periscope depth a little bit of an up angle to help control the boat to periscope depth. As I discussed at the Ship’s Control Trainer at the Training Center. Normal process for going to periscope depth, the Diving Officer of the Watch, who is responsible for maintenance of depth, periscope depth will bring on added ballast before he leaves 150 feet to compensate for sea state near the interface.

The action of the ocean running over the near proximity to the back of the hull of a submarine tends to cause a low pressure area and causes the boat to act lighter than it really is when you get close to the surface. And so to compensate for that the Diving Officer's typically will bring on water to make it easier to control and keep the periscope depth.

And in this case, one interesting thing is that the boat--when the depth is stable--you see the depth is stable here and here. The pitch angle on the boat during those periods of stable depth or where it is fairly constant is negative, it's a negative pitch angle. The boat is actually being driven with a down angle to compensate for the fact that it is light. The Diving Officer did not bring on a lot of water in advance to going to periscope depth here or either he was surprised the sea state was higher than he anticipated and there was more surface action causing them to feel lighter than normal. This is sort of an uncustomary attitude for periscope depth. A normal one is a slight up angle. It's easier to control, because the stern keeps the boat away from the surface suction button.

Question by a court member (RADM Sullivan):

Q. Captain, I have a question on that. In normal practice, your experience about going to periscope depth, what does a Diving Officer do while the ship is preparing at a 150 feet to ensure that--to help ensure that when he reaches periscope depth that the has a good handle and a good understanding of his ballast?
A. Yes, sir. As I said earlier, normally the Officer of the Deck would make an announcement that we were preparing to go to periscope depth. He would have this briefing that I discussed a preparatory briefing with all this. Key team members among them would be the Diving Officer of the Watch and they would discuss the evolutions planned for periscope depth and the housekeeping things that would affect his station. He would also discuss what depth he intended to be at periscope depth. There is a unique requirement in order to say we are going to snorkel or do something like that. The ship would have to be operated closer to the surface.

It would be good to advise the Diving Officer early that he's going to operate shallower the normal. So, the Diving Officer once he assesses what the plan is would then--one thing he would figure out from sonar or from other indications of what the sea state was the last time they're at periscope depth. You can get a measure of sea state by listening to the sea—underwater. And based on his assessment of sea state he would bring ballast on the ship to compensate for that sea state. And depending on what that ballast is and what the overall condition of trim was at the time he would bring on probably in the order of 12 to 10 to 20,000 pounds for a average sea state two or three seas. The Officer of the Deck would allow him to do that that takes him a little bit of time. There is a fast flood method, which is fairly noisy and there is a slow flood method that brings on this ballast and floods these tanks. They would like to do it in a slow flood mode quieter more--that's better overall submarine practice. It takes a several minutes to bring on that much water.

This would be going on while the ship was doing its maneuvers to go to periscope depth while you're doing your target motion analysis the Diving Officer independently is preparing the ship in terms of ballast to go up to periscope depth at the same time. Usually, before you go to periscope depth the Officer of the Deck would ask the Diving Officer, "Are you ready to go up and have you ballasted the ship properly." And he would have one last interchange before hand--and how much water did you

bring on? Did you bring on a lot of water? If you brought on a lot of water then the Officer of the Deck knows he’s got to keep some speed on his ascent to periscope depth to help the Diving Officer compensate for that added weight he's carrying. With speed--with submarine speed, allows the control surfaces to compensate for the weight the ship is carrying--extra weight its carrying.

Q. Let’s step back just a little bit. After you've been deep running high-speed, certainly the buoyancy of a submarine will change in the water column as you come up?
A. Yes, sir.

Q. So, during the typical TMA legs at 3 to 5 minutes on a couple of legs, what does the Diving Officer do before he decides--how does he know that he has a good trim before he----
A. That's part of the discussion I didn't cover. That's a good point, sir. If the ship has been deeper for a significant period of time it’s been a long interval since the ship got a good trim. And what I mean by a good trim is the Diving Officer can quickly assess the trim of the boat to really understand that he needs to be at a speed a few minutes at 5 knots, constant speed. Because the boat at high-speed can carry and mask a lot of weight either out of buoyancy condition, light or heavy. The planes--the faster the boat goes the more effective the planes are controlling the depth. The slower they go the more the buoyancy factor becomes apparent and the so the Diving Officer would need a period of a few minutes at 5 knots at low speed to really assess the overall buoyancy condition of the boat. And it really depends on how long it’s been since the last time he was slow to do that.

They compensate for known changes of buoyancy. For instance, if we are making water--drinking water, he brings on water--sea water back aft. And putting it in tanks, he'll know that’s going on, and he'll periodically pump ballast over the side to compensate for the generation of drinking water so they try to do that to keep up with the trim, but before you go to periscope depth at an ideal situation you would allow the Diving Officer a few minutes ahead one-third, 5 knots to assess the trim of the boat before he headed up to periscope depth. Is that strictly required? No. You sometimes you don't have that time. But in an ideal situation you give the Diving Officer a chance to assess his trim first.

Questions by the President:

Q. Captain, this graph of--does it effectively change, when he has a trim change, the height of the periscope?
A. No, sir, the periscope is raised essentially to full height until it stops when it is raised. The only circumstance that where it might not be at full height is if you have a particularly short scope operator. He may lower it a couple inches, and it's only enough so he could see out the optical if he is a short person.

Q. So, there's no practical height change for the periscope?
A. No, But I'm just trying to orient you to the fact that this boat and this particular condition appears to be trim light, so periscope depth are operating with the down angle on the boat to keep a constant depth. They come up, and I believe the first order depth was 60 feet and it looks to me that the boat attained a steady depth of 60 feet right here. Diving Officer's coming up with positive trim--positive trim. He realizes he coming up pretty fast. He pushes the boat down to hold it. He's recognizing how fast the boat is coming to periscope depth and he's trying to control the assent and level off at the ordered depth to 60 feet and it looks pretty good. This could be--what I'm trying to say is I'm trying to calibrate us to the fact that 60 feet was ordered and in my belief judging from the whole analysis of the depth gauge which gauge was the most accurate. The ship had been using the shallow water depth gauge, which is a hydrostatic gauge, mechanical gauge. I pointed that out in the Ship Control Trainer on the boat ship control station and it has been tested at the shipyard for accuracy found to be within 6 inches of accuracy throughout its entire range fairly accurate gauge. It's not out of calibration. That was a gauge the ship believes was most accurate that was a ship that--that was the gauge they were using on this particular day.

It's my experience that the digital depth gauge is seldom used for periscope depth operations because the shallow water gauge is more accurate. There has been a test conducted on the digital depth gauge by the shipyard, but its not a standard test and frankly the results I've seen on that I think are highly questionable. It's not--I'm not sure the test was done properly or accurately and I don't really believe the results on that particular test at this point. We have--that's still being evaluated by the design engineer, the system engineer back at the Naval Sea Systems Command for resolution of what does that data really mean in terms--is it an accurate calibration.

What I'm saying--my feeling that the shallow water depth gauge was probably pretty accurate. The digital depth gauge was probably off a few feet. They were controlling at 60 feet. The corresponding digital reading was about 63 and a half indicating about a 3-foot error between a shallow water gauge, which I think is accurate and the digital gauge at 63 feet. Do you have a question, sirs?

Q. Yes, I do, this may not deal with--I don't think I want an absolute answer in terms of depth differences here, but it just kind of goes to how you'd expect a submarine to react to what they thought were depth differences. We heard some testimony about a 6-foot difference and I'm not in my mind--it's not clear to me yet what the 6-foot difference was. It might be in what you talked about that other equipment, but if you felt like you had a difference in 6-feet--is 6-feet a significant number to a submariner for----
A. Yes, sir. My own personal command experience, I had a great deal of frustration with my own depth gauges. It seemed like every time I went out to sea they were all reading differently and at periscope depth, 6 feet is a big deal--it is a big deal. We have much more control and the digital depth gauge is good for deep control when depth--precise depth is not that critical. It's fine but the shallow water gauges are generally better to find control of periscope depth. That's why we have it. That's why it's there. It's a wider scale.

Q. In my experience--my experience operationally is flying, 66 Flag, I wouldn't know if it were 6 feet or not unless it was an aircraft carrier, that makes a big deal, but its all visual so you don't care about it, it's relative and its not absolute differences in height. It's a concern for a submariner that 6-foot difference. How would you expect them to react to this concern, would you expect a placard or a template or an indication or a log entry or a----
A. If it was really out that far we would have a system that's called a calibration, out-of-calibration label, where you could actually sign a depth error to the gauge, it's an orange sticker that goes on that particular meter that you find is out of calibration. And there are--there are processes by which we can ascertain which gauge is the most accurate. When the boat dives or it lowers, it's going deep from periscope depth, we do know one benchmark and that is that the head window on the periscope is at 64 feet and 7 inches. So, as you submerge the boat typically the last thing you do the Officer of the Deck is looking ahead, and when the seas cross the window he marks that.

"Scopes awash," he announces. And the Diving Officer marks the depth on his indicators and he determines which gauge reads the closest to 64.7.

Q. So, you're doing your real time calibration is what you're telling me?
A. When you do your calibration check--now there's clearly on a rough day when you have waves it's a little rougher than that, but you kind of get an idea which is the closest one. It's not a precise--the only time it would be precise if you had a millpond sea with no oscillations. But it's pretty close and it gives you a clue that--it'll certainly show you if one of them is off by 6 feet.

PRES: Okay, Counsel?

CC: Could we have the next slide, please?

Questions by Counsel for the Court:

Q. Are you done with this, sir?
A. I got--we got off on a tangent. I would just like to go over a few more points on this, if that's okay.

Q. Yes. Go ahead.
A. He came up the--so I pretty well established in my mind that this digital gauge was off by about 3 feet from the shallow water gauge, and I think the shallow water gauge is about right. So he came up--it looks like they came up to 60 feet, and as I said he's trying to hold that he's got some negative pitch on the boat. Maybe a little too much negative pitch because the boat starts to sink. It goes down and bottoms out through most of this periscope depth time--he's down--a good portion of this he's down here at 66 to 67 feet. If you apply that three--it's digital--if you apply that 3 foot error that brings it up to maybe 63 feet. Which as I said a minute ago the head window centerpiece is about 64 1/2 feet, so there's very little scope out of the water during this entire phase of the periscope depth evolution.

Questions by a court member (RADM Sullivan):

Q. And that would have been during what I understand the initial periscope search of----
A. The initial periscope search----

Q. 38 second time----
A. Yeah, it's 38 second time, so that's between 40--the scope would probably break somewhere in here [pointing at screen], this is the way it's logged, their scope would probably break somewhere in here. Its kind of hard to know because the seas were kind of swelly that day. We picked this time as being pretty close so starting from here you need about 24 seconds of low-power sweeps so that would that would be forty to times 60 right at--this time right here would be the initial three sweeps. Somewhere in that period we already achieved 60 feet and we're sinking out a little bit heading back down to deeper depth and then we stabilize out here. The Diving Officer puts on positive pitch to try to recover to his order depth of 60 feet and then I believe an order depth of five-eight feet was ordered right in here. He comes up and he looks like he stabilizes out here at probably about 58 feet. The Diving Officer and the Helmsman both report the minimum depth they got to was about 57. They basically over compensated which would be these up here, which just fits this 3 foot error continues to fit just about perfectly across this whole chart. 57 feet on the shallow water gauge and then the emergency deep drill is given. What I am basically saying is the periscope depth period--there is a good period of it in here that was fairly close to the water interface. It was not very much scope exposed even from a calm sea state level, let alone one with sea state in it?

Q. So, you'd probably get some wash across the head window----
A. You might get some wash. But, in any case, you are very close to the interface. And we know just--I wasn't out there that day. But I did see a lot of the news video that has been played over and over again of the boat on that day. And there was obviously some swells--some chop. And so your eye is very close to where the base of those are and those swells are on either side of you. It is very difficult to see a long way when you have these oscillating mounds around the scope.

Q. So, help me with this Captain, because the depth was ordered to go up to the higher look by the Officer of the Deck, I believe by the request of the Captain is the way I understand it. But, the time they were actually at the higher depth, if you will, was 1339 and 30 seconds to 49 seconds, is that what that says?
A. I would say about 45.

Q. So, 15 seconds, is that what that is telling me?
A. [Pointing laser at exhibit.] If I would say that is 58 feet right there; maybe that is 57, that's from like point of time 29 to time 44, 45, so that is about 13 or 14 seconds----

Q. That he was actually at the ordered depth----
A. 58 feet--57 feet, somewhere in that area. That is what I get from this, and at this depth here he is at 63, so digital, so he is at 60 feet here again at that level, so that is a little bit longer maybe back to time about 22, so it's probably about 20 seconds of good observation time.

Q. So, at 20 seconds at that height, say you were searching at high-power--I'll ask the question twice, low-power and then high-power. What kind of sector would you adequately--I mean it's subjective, but----
A. You couldn't cover the whole 360 degree azimuth at high-power in that time frame.

Q. What about a 10 degree----
A. It depends how fast he is looking and I have some demonstrations--I had an agent of ours that works on training aids put together some visual aids to show you the effect of being at deep depth versus shallow depth and how fast you can turn and see things. If you would like to see that I could portray that for you.

PRES: I want to see it.

CC: LCDR Harrison, could you queue the videos, please?

[LCDR Harrison did as directed.]

PRES: Can we finish our discussion of this slide before we go there?

Q. CAPT Kyle, have you finished your discussion on this slide?
A. Before we show that, I'd like to go over this one final slide on this and then we can just come back to that display in just a moment. This is a similar depiction of similar generation of plots based on the reconstructed data, and this is the range from the EHIME MARU to GREENEVILLE over time; the bearing over time, and the aspect of the ship, and as you mentioned, VADM Nathman, this shows again decreasing range, steady bearing, just depicted on these two plots, that's not really what I would like you to focus on, it's this one down here, this is the aspect of the EHIME MARU versus GREENEVILLE.

The time their periscope depth was right in this time frame. You can see the aspect is about, oh it's difficult to see here, these are 15 degree increments here, it's about starboard 30.

Q. Or maybe less?
A. Maybe less, but starboard 30 decreasing--starboard 30, if you use just trigonometry shows you half the length of the ship. If you are looking at it, it's not like this [pointing laser at exhibit] it's like this, starboard 30. If it is a 150 foot long ship, a 170 foot long ship, you are seeing like 85 feet of it, so it's not a bow on picture, there is a significant hull length that would be visible through the periscope if you got a good look at it.

Questions by a court member (RADM Sullivan):

Q. In your experience, when a submarine officer looks at a contact that has a 30 degree aspect, what do they tend to call their angle on the ballast?
A. They normally call them greater than that.

Q. Because why?
A. Because it looks longer. It looks like you are looking at more of the ship than you are and there is a natural--that's a natural thing that most junior personnel, people looking out the scope typically call it--in fact almost--it is sort of a thumb rule that some people use that says that, whatever I think it is, what it looks like in my gut, I divide by two and that is probably what it really is. Until you really learn how to look at the ship and really make this assessment of what is the angle, it's--the natural tendency is to say that you're looking at more of the ship than you really are.

Questions by the President:

Q. But that is a little bit like reverse engineering. You know we're looking at this and so you can assume if you saw, just like you last described that, I'm not going to give you the 30 degrees here. I'm looking at that and saying maybe it's 25, maybe it's 20, so that is going to reduce some of the geometry, I think, of that--how much shift you are going to see. I'm trying to make sure--from the time--show me where you think periscope--the periscope searches occurred.
A. Let's just go back one slide here--

[LCDR Harrison did as directed.]

WIT: [Pointing laser at exhibit.] From time 38, 40 to time 39, 40.

Q. Show me on the graph, so I make sure I----
A. Next slide--

[LCDR Harrison did as directed.]

WIT: Time 38, 40 to time 39, 40--right in here [pointing laser at exhibit.]

Q. Okay--alright----
A. And, this is the part where the aspect narrows because the ship is turning, it's increasing speed and going out in front of the boat.

Q. Are you satisfied then on that--on the green line since this is not expanded at all, that is about 30----
A. Yes, sir----

Q. Because when I saw it, I was looking closer down, but I understand that is on the dive.
A. That is on the dive and what has happened is we've increased speed and we started to drive out in front of the boat--of the EHIME MARU, so 30 I think is good----

Q. Is reasonable?
A. Yes, sir.

WIT: Okay, I think we are ready to show the AVI.

PRES: Are you going to introduce this, Captain, before we----

WIT: Yes, sir, I will explain it to you [pointing laser at exhibit.] What we are seeing here is a--I'm trying to show in this, not necessarily an actual depiction of the sea state on February 9th. What we asked this team of people who put together these training aids and training videos for us--they had a variety of sea states and we picked--they have a model that generates sea conditions, and we picked one that was--we picked one and tried to replicate one that was similar to what we saw on the news video that covered the accident.

We also asked them to put a periscope at 1 to 2 feet above that sea state and show us what it would look like, and this is a randomly generated sea condition. There is a random generator in there that generates the wave heights--the way you will see

them on here, and we placed a contact at between about a mile to mile and a half away--somewhere--a mile, 2,400 yards, I think, away from the periscope and he is in there. He is in there in every case. He is in the generation, but if the sea is in the way, you just don't get to see him. He is not there, but there will be a little arrow that comes by and shows you where the contact is in the model that we built.

In the lower part of the screen, you'll show the bearing--the bearing that the periscope was looking at, and to get you ready to look for the contact, contact bears about zero-two-zero on this scale for that day. The ship that is depicted in there, the contact is as best as we could within the model parameters, roughly the size and coloration of the EHIME MARU, so you get the size of the contact is about right, and it is about the right coloration. There is also haze depicted that we tried to make it look as much like the hazy day we saw from the video taken by USS ASHEVILLE on that same day. What did the sea look like around that day, so it's sort of trying to replicate the conditions and give you an idea of the affect of search rate with the scope and the sea condition where you are relative to the sea. The first sequence takes you at a depth of about 1 to 2 feet above the seas, and the last sequence puts you at a depth of about 10 to 12 feet above the seas and you will see the difference between the two. I think that's----

Questions by the President:

Q. Captain, I think before you do that, I also want to make sure I understand that this is--there is nothing absolute about this, is there?
A. No.

Q. And at best, this would give you a way of getting a sense of what relatively we should understand in terms of these heights and the way things--because everything is going to be relative. It doesn't replicate the sea conditions, doesn't have anything to do--you know you could be on bearing zero-two-zero and you could have a different sea state, so we should just--this is a way of finding out what we can diverge from. What are some things that we can understand?
A. Yes, sir. Give you an--it's specifically designed to give you an idea of how relatively small contact is affected by the sea conditions, the depth and the speed at which the scope is operated. So, if we would just roll video one.

[LCDR Harrison did as directed.]

PRES: Will you narrate while we go along?

WIT: Yes, I will.

CC: This is all part of the exhibit that we marked yesterday, Exhibit 39.

WIT: This is a rapid three sweeps at periscope depth. The arrow right [pointing laser at screen] that you just saw there is where the contact is located, bearing is on the right--on the lower right hand corner there. Scope is 1 to 2 feet above the sea conditions. See there is no scope wash, but just the mounds of the ocean block the view of the contact. This is now the high-power look down those same bearings at about a 30 second rotation rate. A little too fast, really, for a high-power search. As a submariner, I will tell you this is a very good depiction of operating close to the interface, it's a very good model. The contact just went by if you didn't see it there, there was a little white contact that went by there. Now, we are going to do another search and you will just see an arrow, he was not visible. Keep watching and when you get up to North, get ready to look for this. Same high-powered search, he is there, but he was not visible. Would you like to look at that one again? I don't know if anybody saw it. Did you see the contact on the first--I was talking right there? You want to run it again, sir?

PRES: No, I think you've--does counsel want to see it again?

Counsel for CDR Waddle, party (Mr. Gittins): No, sir. Got the point, sir.

Questions by a court member (RADM Sullivan):

Q. So, when you have a--if you had a contact that you are trying to search out, what that also tells me is why it is important to put it exactly on the bearing----
A. Right, so he gets a chance to see through the sea----

Q. So you're not sweeping----
A. So you're not sweeping and you can wait for the time when the contact is above and the swells are out of your way. The next two videos, they are short, show 10 to 12 foot of scope exposure on the same day, the same sea conditions, the same model, the same boat out there.

Questions by the President:

Q. Now when you say that exposure, help me with what's the----
A. The keel depth of the ship is now instead of being around 60 or 58 feet, it's up now near 50 feet--52, well, it's just below broaching, 52 to 51 feet, so you have a good amount of periscope sticking out of the water. Run video two.

[LCDR Harrison did as directed.]

WIT: This again, is the high--high--there is the contact that just went by. This is the 8 seconds per sweep, low-power look. There he is again.

Q. That whitecap that could have been a big wave. What would you expect----
A. What would happen is--what would happen is, if you saw that you would continue your look. What we train the Officer of the Deck to do is look at that. If it really catches your attention, and it's really big, you would stop this sweep, study that contact for a second to see if there is imminent danger, I mean collision imminent, in which case he would initiate emergency deep to leave the interface to try to avoid the collision. If it is not an immediate problem, he would continue his low-power sweep to look for any other close contacts. But he would stop. Unlike this video, he would not just keep panning by. He would stop and assimilate the image of that contact. You would have to make a pretty snap decision of whether it's immediate----

Q. Those are expected standards for an Officer of the Deck?
A. Yes, sir.

Q. Or anyone that has the periscope----

Questions by a court member (RADM Sullivan):

Q. What is--the rule of thumb is, on a telemeter, which is the cross hairs, if it's taller than one division it is time to leave periscope depth.
A. That is correct, and that is based on a 100 foot mast head height ship, so if you saw one that was clearly a smaller ship than that, it's----

Questions by the President:

Q. He is real close----
A. It's real close and, one--it's not conservative. You would want to leave, even if he is less than one, like a half, because half as big a ship, you just scale it down by the appropriate number. Run video 3 now.

[LCDR Harrison did as directed.]

Questions by the President:

Q. What is this we are going to see, Captain?
A. This is the low-power--I mean a high-power look at the same height. This is the speed--this is the recommended standard speed for looking in high-power doing a careful search, a 360 degree search at high-power. Now, could you go--this takes 3 minutes to do this entire 360 degree search, and that is sort of the standard. Could you go a little faster maybe, would you have to go a little slower on other days; maybe, but this is a good benchmark speed to do a detailed search at high-power 360 degrees around, that's how fast--that's a good speed.

Q. Let me ask you a question about the periscope itself. Are these similar to something like binoculars in the sense that if you have to wear corrective lenses? Do you not have to wear lenses when you look out of a periscope?
A. You have a diopter setting. If your eyes are not that bad, you can adjust it for your vision, and if you have very poor vision, we issue glasses to people that you can actually look up there and see, use them through the window.

Questions by a court member (RADM Sullivan):

Q. But, the scope is normally left on the CO's diopter setting, is that correct?
A. It is not the CO's necessarily. The scope operator, when he raises it, he should know where the diopter setting is for his particular vision.

PRES: Okay, we might want to watch this now.

[Viewing video.]

Counsel for CDR Waddle, party (Mr. Gittins):

Q. Is this at 50 feet?
A. This is--I can't say it is 50 feet, per se, it shows about--the modeler was asked to put 10 foot of scope exposure, 10 foot above the seas. The skit is not--I can't depict the actual ocean, it's a rendition just to show the effects of distance above the sea. It is the same model running in the background as we saw on the previous--on the previous depiction. Again, that is a very obvious presentation of the ship. You would stop and look at that. That's the same model and the same location as it was on all three videos. You know, that's really the end, I think it just runs out here.

CC: Sir, I have no further questions on the reconstruction portion of the direct.

PRES: I just have a few. RADM Stone, did you have anything that you wanted to ask?

MBR (RADM STONE): No, sir.

PRES: Okay.

Questions by the President:

Q. Captain, I want to ask you a couple of questions that go to your experience and not necessarily some of the reconstruction here. I am asking that because of your obvious position on the staff in terms of being responsible for training, so I think you have an appreciation for standards in the force because I think you deal with a lot of that, is that correct?
A. That's right, sir.

Q. When a ship loses its analogue visual sight display, AVSDU, what are the kind of--what are the--that's an important instrument—I think we know it's an important instrument because you can see sonar data on it, it's kind of a synthesizer in a little bit, I think. It is part of helping the watch team, but particularly the OOD or anyone who's got the Conn to understand what the sight picture is for the ship; is that correct?
A. Yes, sir. I consider it--on my ship, I consider it a vital piece of equipment, very important.

Q. If you don't have it, what's the--talk to me about how you compensate for that loss of that. Well, first of all what do you think is the standard in the force for compensation. Are there any rules on that? If not, what's the expected compensation?
A. The normal situation if the AVSDU video display unit went down, and I will tell you that for me, the primary cause of losing one of these display units is a failure of the deflection amp and that CRT up there [pointing laser at exhibit], and that has a fairly--I don't want to say it is a high failure rate item, but that's the normal weak spot in that whole chain is a failure to a deflection amp and if there is a significant--if you are going to operate for a while--continue to be at sea for a while--if we were on a cruise someplace----

Q. You would CASREP it?
A. I would CASREP it first of all. Secondly, when I--I don't know if this is the case today, but when I was a CO we would carry a couple of extra deflection amps and spare parts. It would be a high priority fix it as we go situation. I would have the Sonarman out there repairing that deflection amp. And if we were out of spare parts, and it came to that--we didn't have any spare deflection amps in spare parts, we would cannibalize a deflection amp out of one of the sonar repeaters--one of the ones in Sonar and bring it out and put it in that location.

Q. So, it’s the same WRA? You've got the SRA card for it out of the same WRA; is that right?
A. I am not sure what WRA----

Q. I'm sorry. Wrong term. Basically, the same kind of--you have interchangeable cards then for the display?

Questions by a court member (RADM Sullivan):

Q. They’re interchangeable.
A. It's actually an amp--that's right. So we would--it is that important a piece of equipment. That is my own experience. It happened on my ship; we lost it, and you know--number one priority. Get that fixed, that is a primary issue. In the case in question, I happen to know, having talked to the ship's Navigator who discovered the equipment failed on the morning of the underway shortly before they were getting ready to leave and you were just going out for the day for a few hours and coming back, going through your mind is what are the odds of getting this thing changed and back together before we have to leave

would go through my mind, could we get this fixed before we went? Are the expertise here? Do we have the parts? Could we get that done? That would be the first option is to try to repair it. You are in port. You can go to the supply center and get parts. You can go to you know--there are more parts available to do repairs if you are sitting along side. If you make a decision to continue to go to say, well we will just have to compensate for this, and then I would have to go through my mind as to how are we going to do this? What is the right answer and in an ideal situation, you would have the department head that owns that piece of equipment, in this case the Weapons Officer, would be told to propose a compensating procedure to operate without this equipment operationally and write a temporary standing order that says here is how were are going to mitigate the loss of this equipment.

Q. A temporary standing order could be something written in the logs or it could just be something passed down to OOD to OOD until you got it corrected?
A. It could be--is our standard is when equipment is down that you write it out formally with a piece of paper, signed by the Captain, proposed by Department Head. You know, approved by the Captain is an alternate as a means of mitigation for equipment casualty. In the meantime, before this piece of paper is written, you would probably establish some verbal pass down. Here's what I want you to do until we get this written, this is how we're going to mitigate this problem. And that's--that's my----

Q. Well what would be your expectation to the standing order? What would you--what do you--are there--do you have any expectations?
A. Well, I could say--you could--there are several possibilities. You could say the OOD will check his contacts by going into Sonar and looking at the sonar repeaters. You could say we will station a plotter at the Contact Evaluation Plot to plot the data more frequently at a more frequent rate so it more closer replicates what's coming off the sonar display rather than every 5 minutes or 10 minutes I'm plotting every other minute data. You could compensate by careful analysis of the time bearing display on the fire control screen, it gives you the same data that is coming out of Sonar. It's available in the Control Room. All those are possibilities.
Whatever--personally I would say go into Sonar--is what I would--I'd feel most comfortable with. Because it gives you the right--you're looking at the screen you're used to looking at. It's not something else. And also have the--I would personally

like the CEP plot. I probably personally would rely on the CEP. I'd probably station a plotter to take care of that.

Q. Okay. I'm going to get to that CEP. If the OOD's compensation is to go more frequently into Sonar, would the Sonar Watch also know?
A. Oh yes, sir. This would be routed to--this would be told to everybody in the party.

Q. So, the watch team has an overall assessment. Would you expect other--okay, so you've got an OOD up there that you'd expect to react to that, right? He's got the Conn, so he should react to it, but are there other watchstanders that ought to react to the fact that there is no AVSDU up there? Should the Chief of the Watch react to it or the Maneuvering Watch react to it? Do they use--anybody else use it?
A. No. No one else uses it. However, that's why we go to the formality normally of writing a piece of paper that disseminates that because it is routed--it's kept right in the Commanding Officer's Night Order Book. This temporary standing order is in effect. He would refer to it in his night order book as "Temporary Standing Order Number 5" refer to that for compensation of the AVSDU. And everybody--that standing order--or his night orders are routed to everybody on watch. The maneuvering area, Chief of the Watch, the Diving Officer. In this particular for this equipment the folks that are effected by this equipment are the Sonar team, the Fire Control Team, and the Officer of the Deck.

Q. Okay----
A. And they would have to get the word right up--right in the beginning.

Q. You implied in--I think in your earlier testimony, you talked about the Officer of the Deck checking frequently, by either looking over the shoulder or looking at the display, at the Fire Control Watch--the technician watch. Now does that--does the loss of the AVSDU--just to make sure I understand this technically, does that affect what he'd do? Would he check more frequently with that? Make me understand it a little bit better.
A. Without being able to do your own analysis--I mean I can't tell you exactly. I can only tell you that that--in preparation to go to periscope depth my experience, even to this day, as I position myself in front of the AVSDU at some position where I can look up and see what's going on. If I'm riding a boat today, in an oversight rule, I try to get there and observe the

AVSDU and I immediately fall into my own mental analysis of the contacts and what they're doing, it's just part of the regimen. And, if that was not available I'd have to find some other place to stand to get the same sort of data so I could do this assessment myself. And that would be--if I was riding a ship I'd try to go to the CEP or I might go into Sonar. CEP is not maintained adequately, it doesn't have enough data there. I'd have to go to Sonar and dig in and get that information or I might go behind the fire control screen. I try to stay away from the fire control screen until the last minute. I'd rather make my own assessment mentally then go to the fire control screen to see if it jives with what I've come, on an independent analysis, from what the Fire Control Operator is coming up with.

Q. Alright. One of the places I'm going to be really interested in--I'm going to go to a couple of other displays, but I'm really going to come back and talk to you about like the mobility of the OOD under certain conditions, particularly going to periscope depth and how much movement you want out of this officer. Comment on the value again of understanding the information as an officer who has the Conn and the deck, the value of the CEP without the loss of the AVSDU.
A. Personally I really like the CEP. I really believe in it. I think it's an excellent plot because it gives you, in a very expanded time frame, what's happened with the contacts in relation to maneuvers of our own ship. That big black line and you see the contacts and the black line crosses the contacts it means I've taken a good leg across the line of sight of these contacts, but never has crossed it. Then I could say, "Why haven't we evaluated this contact." You can see the overall bearing trend. Is it a zero bearing rate decreasing range situation or is it a guy that just looks kind of zero right now but he really has a slight right movement or slight left, oh that's probably a distant contact. I've done some good maneuvers. Just in a few minutes of study of the CEP plot you get a pretty good picture of the situation around the boat. You have to study it. You have to look at it. But it's an acquired skill. I mean it's not--I know a lot of officers who have a hard time putting a horizontal--a situational--converting a vertical plot to a horizontal picture. Some people are more adept at doing that than others and making that correspondence. A lot of people when they look at a horizontal display of contacts have to take a maneuvering board and just put tick marks to see where they all are and then they can look at and they make their own conclusions. That's a very common practice for a junior OOD. A guy who has just been qualified for a short period of time, he'll mark these contacts on a maneuvering board

and see where they are as azimuthally and then make his determination.

Q. So there's an integrate value to this thing and the more experience you have with it you can integrate a lot more out of it. One of my understandings, and let me know if I'm correct on this one, is that on the AVSDU a lot of displays--the time history is shorter because of the displays, but on the CEP it's a significant time history so you're building what I would, in my standpoint a significant situational awareness in your ability to integrate that you'll build more situational awareness with a good CEP?
A. Yes, sir. The CEP that I depicted up there was basically drawn pretty much to the standards of the manual. And you can see on that one display we looked at over an hour and a half of data--was presented right there all within view. The maximum amount of data I have on a little old screen this big is about 37 minutes on the AVSDU.

Q. Okay----
A. On this--on the time bearing mode you can scroll a little bit more data back but now you have to get real close to the screen and screen in, it's harder for me to kind of understand what's happened there because own ship's course is not as clearly presented on the time bearing display. So the CEP, once you get yourself accustomed to interpreting it is a very valuable plot.

Q. Okay. Now if the CEP is poorly maintained, and by poorly maintained in my view there's some basic information that should be on the CEP. And what I believe the basic information from testimony is that you should have your contacts on the CEP as well as your ship's own course. I think in testimony earlier--I believe I'm correct on this, that there wasn't contact information regularly maintained on the CEP, particularly in the last hour before the collision.
A. That's correct, sir.

Q. Well what does that--is that a strong indicator of the value than that the OOD or whoever has the Conn how they use the CEP?
A. Yes, sir, it is.

Q. Because they're not reacting to something that should be supporting them.
A. That's my conclusion as well.

Q. Okay----
A. I'll tell you from my own experience as I ride boats today in a supervisory role, I come on and I'll look at the CEP and I'll come and look and I'll say, "This is bare minimum standard here and not being maintained very well." And I may draw the conclusion that this particular boat is maintaining this plot proforma and they're using other data to make their assessments.

Q. Okay----
A. And there is other data to do the assessment. You can do--you know the required amount--you do not have to have a CEP. It's a very good plot.

Q. Okay, but before we go down that road a little bit what I'm trying to understand is if you have a poorly maintained CEP, are you sending a signal about the quality of watch that you're standing?
A. Yes, sir, it is a standards issue there.

Q. Alright. Now let's talk about the cumulative affect of this and the ability to get other data. If you don't have an AVSDU and you have a poorly maintained CEP with no contact information on it, if you have the Conn, what is your ability to maintain the situational--how would you assess in a qualitative sense? Because I don't see any quantity type of data here, real data, it's a quality--what is your ability to maintain the quality of the watch that you should maintain?
A. It's fairly degraded, obviously with the AVSDU out and no CEP as a backup. You now have--your options are now further limited and you're now almost obligated to spend more time at fire control or physically going into Sonar and looking at the displays in the Sonar Room itself.

Q. Okay, so that goes to access, it goes to mobility then if you have the Conn. I'm going to go back to what the ship was doing, and this goes back to your experience too. The ship was doing angles and dangles, high-speed maneuvers that I understand require a lot of coordination between the Bow Planesman and the Stern Planesman, and the Maneuvering Watch--the Control Watch.
A. Ship's Control Watch.

Q. So, typically you would expect the officer who has the Conn to be a direct--to observe those?
A. Yes, sir.

Q. Okay, not be moving around?
A. Yes, sir.

Q. Would you--would you--if you had the--if you were--well if you were the XO or the Captain and you saw your OOD leaving the immediate vicinity to watch this, would you be disturbed by that?
A. To go to the Ship Control Station? Close proximity?

Q. No, to leave to go into Sonar as an example. Would it bother you that this was happening?
A. I would expect his focus to be at the Ship Control Station also.

Q. So, the Officer of the Deck is--I'll use my words, kind of pinned at that station. He's pinned to observe that particular--his mobility is reduced?
A. That's where the risk lies at that point and time is improper operation of the planes and his--he has a major part to play in the control of the ship during those high-speed maneuvers and depth changes in the speed and angles. He needs to be watching the response of the ship, and if necessary, if there is something that goes wrong, if one of the planes sticks, or you have a casualty over there, it's now critical that he take immediate action in response to that--that planes casualty. So he needs to be directly focused on the Ship Control Station.

Q. Alright, so the next thing is you come out of angles and dangles, according to testimony, and the ship--the OOD gets the order, "Be at periscope depth in 5 minutes," I think that's consistent with the testimony. Now my understanding is that's relatively a short period of time based on standards that we've talked about either in the CO's Standing Orders or guidance from the--from higher authority.
A. Yes, sir.

Q. So when you're the Officer of the Deck and you have to respond in that period of time you don't have a good--I don't think the ship has good SA because I think it's situational--because it's--it is running around with it's sensor somewhat diminished in quality because of the speed and the maneuvering like you've talked about that before. He comes out of that--he has to--now is he--does he become pinned again when you have to focus on getting the ship to periscope depth. I mean would you expect than if that's so accelerated would you expect the Officer of the Deck to basically stay at the--in the vicinity of the periscope and the vicinity of the--inside the Control Room itself instead of moving around?
A. No, at that point and time what I kind of would expect, if it became urgent to go to periscope depth he would quickly brief

the Ship Control Station to make preparations to come to periscope depth. We're gonna come up on such and such a course." Give that Diving Officer a quick brief and then his focus--he would switch gears from Ship Control. Once he got the ship headed in the right direction, it was slowing down, it was coming up to one-five-zero feet, he would probably immediately go to the starboard side of Control if the AVSDU is out of commission. If the AVSDU was there he would stay right at the AVSDU, it's a great position because he can continue to keep an eye on the Ship Control Station and he can also evaluate contacts. But in this case he'd probably leave the Ship Control basis--business to the Diving Officer and start migrating to the starboard side of Control to analyze, to take a look at the contacts they're holding.

And again, if the CEP was up there he could get a quick update on how--where do we have and where--what kind of maneuvers have we done on everything. But he didn't--as far as I know, he did not demand the CEP to be there. So obviously in this officer's mind the CEP was probably not as dependent or reliant--he didn't rely on the CEP as much as some--as I would've perhaps so he probably went to the fire control screen or he could've gone into Sonar to see what was going on, but he would than be sort of--to use your words--focused I guess is the best way--pinned to the starboard side now to the sensor side of the Control Room to do the analysis necessary to go to periscope depth.

Q. And by that you mean he'd be looking over the Fire Control Technician's shoulder. He'd want access----
A. He would or he could go through, like I said, he could take one of those spare consoles that was not being used. He could go through an independent evaluation of his own. He's qualified and knows how to operate those consoles as well as the Fire Controlman. He could do--he knows how to do MATE. He's trained to do that procedure, not that I expect him to. I wouldn't really expect him--but he knows what--he knows how to review that display and evaluate it. He might look at the bearing rate display.

If you saw over at the Training Center those two Fire Controlman had that bearing rate display up to help them in their analysis. I would guess normally that's up on one of the consoles next to where the FTOW was sitting. We'd have that display up in the time bearing mode. He may look at that. He may have gone into Sonar to talk to the Sonar Supervisor. Ya know, what contacts do you have, assessment of range. Do you have any information?

He's obviously in a very accelerated mode. If he's told to get up in 5 minutes. That's really----

Q. One thing that I heard was you know the expectation as you approached periscope depth--I'm not sure what depth the--the--because I don't remember from testimony that the OOD gets on the periscope and basically is looking forward of the boat for dark objects. Is that a 150 feet?
A. 150 feet. Yes, sir.

Q. So he's on it then?
A. That's after--that's after they've done all the contact analysis. They--that--in the sequence of events they do the prior to TMA--prior to periscope depth target motion analysis come to conclusion that it's safe, have discussion between the Officer of the Deck and the Captain and at the Captain's agreement that it's safe to go to periscope depth he would then raise the periscope, stay on course and speed, check with the Diving Officer, "Are you ready to go up?" I'm ready to go up. I've trimmed the boat." He raises the periscope, sets the sensors on the periscope properly, the ESM, adjusts the diopter for his eye, puts the scope in a proper power, trains it up toward the surface and then he would say, "Make your depth 60 feet and the ship would start up.

Q. What I'm trying to understand a little bit because I--it's not clear to me is there--you've implied that the Officer of the Deck now should get away from the control side and get more to the sensor side in preparation.
A. Yes, sir.

Q. And so, he's got 5 minutes--that's still 5 minutes. He's got time to do this, but from 150 to periscope depth takes a certain amount of time and working this backwards a little bit, there is a--there's some limitation then on the Officer of the Deck.
A. Very definitely, with a 5-minute limit is a very tough limitation. It takes roughly--my standard for going to periscope depth is no more--from 150 feet to periscope depth is, I think--I draw the line at 3 minutes as being too long, but the standard time is around 2 minutes just to make the transition from 150 to periscope depth.

Q. So, you might spend a minute or two briefing a watchstation and getting organized--if I get this wrong let me know because I am trying to figure it out. He's got a couple of minutes or so to get his watchstation organized, so that everyone's antenna goes up, the team gets briefed, etc. then he's got maybe a couple of minutes that he should be on the scope getting everything ready so he can search with it. So he's got a minute to spend on--or thereabouts to spend on other sensors. Is that a good time history?
A. If 5 minutes is the real limit, that's all you would have left out of that whole process, which I--I----

Q. Let's go back to the CEP. The CEP, for an hour, hasn't been maintained properly in terms of what I would call normal standards for the submarine community.
A. Yes, sir.

Q. Okay, you've had the XO walk through Control. You've had the Chief of Staff of SUBPAC walk through Control or in Control at a certain amount of time. You had the CO on the Conn--or he's not--he doesn't have the Conn, but he's on the Conning Station, he's walking around--I'll go back to some experiences, but if you saw an Officer of the Deck maintaining low standards or no standards, you'd immediately correct the Officer of the Deck.
A. Yes, sir.

Q. Wouldn't you have expected the XO when he looked at--first of all would you expect the XO to look at the CEP when he walked through?
A. Yes, sir.

Q. Two, if he saw it was poorly maintained, would you expect him to correct the Officer of the Deck?
A. Yes, sir.

Q. Okay. Since--is my conclusion then here or is there a conclusion here, that if it wasn't properly maintained that these corrected measures never occurred?
A. I'd have to say so, sir.

Q. Okay, let's go back to one last thing here and I want to get a sense. In the submarine community, the Officer of the Deck acts as the Conning Officer as well as the Officer of the Deck?
A. Yes, sir, in most cases.

Q. Okay, in most cases----
A. There are conditions--for instance, an OOD under instruction may have the Conn, the OOD maintains the deck.

Q. Yes, but it's a way of doing it, but when one guy is qualified and he's got them both--I mean he's watching ship Control, he's also watching--he's responsible for the control of the ship and the proper placement, the navigation--safe navigation of the ship?
A. Yes, sir.

Q. If you have--if you're doing angles and dangles and you have--there's a cooperation effort here, but I'm trying to understand this. You've got the Commanding Officer with the Officer of the Deck standing together doing angles and dangles and properly so. This is a very complex--it is something you can screw up and if you do you can hurt the ship, you can hurt people, you can bang it around.
A. Yes, sir.

Q. So he's really under the direct supervision of the CO?
A. Yes, sir.

Q. And there's a lot of close observation. If the Commanding Officer starts giving more and more what I call Conning orders, like let's go to this course or let's go to this course, or go to this depth, or go to this, and he does it through the OOD, is there a sense--there's a period of time--it goes back to--I'll go back to an example of a casualty. If the Commanding Officer feels like things are going south, often the Commanding Officer, and this is I believe according to rules and regulations says, set course one-two-zero all engines stop, as an example, he essentially has the Conn?
A. Yes, sir, and our rules say if he makes those orders he takes the Conn. He had the Conn by default.

Q. He takes the Conn even though he doesn't say, I have the Conn?
A. Yes, sir.

Q. So, you have a very close control situation between the Commanding Officer and the OOD on this--on this boat during this time from angles and dangles to periscope depth to courses for TMA, etcetera, including emergency dive. Which in a way does that remove--help me understand the relationship you think now the CO has established in that Control Room versus what the Officer of the Deck has done.
A. I've seen this on other occasions in my experience watching people do it and essentially you run into a danger. Whether this was occurring or not on that ship I don't know for certain, but you establish a danger that you take out--the OOD basically becomes a mouthpiece of the Captain and he's no longer doing independent thought or analysis. He's just responding to the Captain's direction.

Q. Which would be reflected in recommendations by the OOD?
A. Right he would not--he would just be following whatever the Captain is saying. In other words he's become a mouthpiece for the Captain's--Captain by default really has the Conn. He's conning the boat, but through the OOD. The formality still is there, but the OOD is still on watch. He's still the deck and the Conn and hasn't been formally transferred, but in fact the danger is that the feedback mechanism, the backup of how the boat is being run is now--essentially the Captain is running the boat as if he had the Conn. And you've lost now this layer of oversight and review and checks and balances that are normally established--for instance, when you're doing the angles and dangles, the Captain may talk to the--he may say, oh let's go to six-five-zero feet, 20 down. And he'll tell the Officer of the Deck to do that and that's pretty reasonable and the Officer of the Deck will execute the order and the Officer of the Deck will supervise the operation of the ship and the Captain now is--he's standing back one level behind and backing up the whole team. In other words, the OOD is part of the team. He's a quarterback. The Captain still remains the coach on the sidelines kind of watching the overall performance of his team there doing--doing their actions. The more directive the Commanding Officer becomes in giving detailed orders, the less he's able to supervise the operation of the team overall and becomes defacto of the quarterback and is operating the team himself. That's a danger here. Now you don't have--you are now dependent upon one man making all the decisions and that's a risky situation in my opinion.

Q. I have one final question then. If you've lost your AVSDU and you have a poorly maintained CEP and you are an Officer at the Conn and that is your accepted standard for the day, for those operations, do you feel like you've artificially--and these are my words, blinded yourself?
A. To a certain extent. It is not--it's far from optimum. You're much--you're not like to operate the boat in that condition. Are you truly blinded? No. But you have to go out of your way now to stay as current on the contact situations--you have to work harder to get the same information that is readily--normally readily apparent to the Officers of the Deck and the Captain and the people who are trying to do a contact analysis.

Q. So those--those--we didn't talk about all the details of maybe a Temporary Standing Order as a result of some of these displays. But given the accumulative effect of the loss of these two displays, would you expect than that--that the control of the ship would seek more time to make sure they had those opportunities to do it?
A. If anything would dictate more time to do the analysis, this degradation certainly would. You would need to go into Sonar, study, walk back out to Control. Things are going to go slower because you have less visibility in the contact situation. That would indicate that it should be a slower process.

MBR (RADM SULLIVAN): Captain, I just had a just a couple of quick questions.

WIT: Yes, sir.

Questions by a court member (RADM Sullivan):

Q. We talked about conning the ship. In your opinion, when a Commanding Officer looks through a periscope and says, “Emergency deep” is that a conning order? Do you interpret it as a conning order?
A. Yes, sir. Could be.

Q. So could there be any gray area who had the Conn in the OOD's mind?
A. Yes, sir.

Q. If there was some question in the OOD’s mind, what could he do?
A. He would say--normally if there is any doubt, he would ask the Captain directly, “Do you have the Conn, sir? Or, if he

gives an overt order, you know, change course right 15 degrees rudder or something like that, he would normally announce to the whole control party, “The Captain has the Conn.” So, it’s very clear to everybody in the Control Room who is driving the boat. And if there was a doubt in the OOD’s mind, he would normally say, “Captain, do you have the Conn?” And, the Captain would either say, “No. No. I don’t have the Conn, you have the Conn.” They would sort that out right there on the spot. We need to know who is giving orders to the ship.

Q. But, the announcement of emergency deep is a Conning Order, correct?
A. I think if—yes, sir, I would interpret it as a Conning Order. But I can see it’s not as clear cut as make your depth 400 feet or left 15 degrees rudder or ahead two-thirds. There maybe confusion there. It’s not a normal way—-it’s not something we normally do. It’s not—-those other modes are more common and would be clear to everybody’s mind when the Captain said that he had the Conn and the OOD would confirm that normally with the statement, “The Captain has the Conn.”

Q. Right, but if there is any confusion certainly there was opportunity to fix it.
A. It would need to be sorted out. If it was confusion in the OOD’s might, he certainly would ask the question, “Captain, do you have the Conn?” “Did you mean to take the Conn by giving that order?” It would be straightened out.

Q. Okay, one final thing----

MBR (RADM SULLIVAN): Can you put up the slide that we started with this morning? And also, I’d like to put up the reconstructed chart and the navigational chart.

[The bailiff did as directed.]

Q. Captain, I just want to examine one area you’ve really certainly enlightened all of us on until—on how we operate our submarines with TMA this morning. But one area that we’ve touched on a few times—I just want to get it clear in my mind when it comes to communications among the individuals involved in this process of TMA, sonar, fire control people, and really, you didn’t touch on it much, but the individuals navigating, the Quartermaster, he’s involved in the process----
A. Sure.

Q. And, as are any officers that are involved, the Conning Officer, the Officer of the Deck, CO/XO. Whoever who might be involved, even a senior individual like yourself. A lot of the information flows—gets communicated verbally, correct?
A. Yes, sir.

Q. Verbally, you would expect frequent reports from Sonar?
A. Yes, sir.
Q. You'd expect Sonar to talk frequently with the Fire Control Technician of the Watch?
A. Yes, sir.

Q. And, you'd occasionally even expect the—I should say you'd see the Officer of the Deck engaging with both of those parties.
A. Yes, sir.

Q. Even so, even if you come up as the situation you kind of described, you're a rider, a senior guy just going to check the situation out, when you walk into a Control Room of this class ship--but really most of our submarines—there's a lot of information you as a new person walking in can gleam without ever asking questions or without ever getting a direct report from these watchstanders?
A. Yes, sir.

Q. And what I want to try to just emphasize to my other two members, each of these presentations and they're different way of presenting time bearing, this picture in various forms is available, correct?
A. Yes, sir.

Q. Even on the CEP, or as you mentioned, on the fire control system if you page—go to the right page?
A. Yes, sir.

Q. Or it's available on sonar, raw data. Basically, that's what a broandband display is.
A. Yes, sir.

Q. This display, time range, is also available, typically, again I might be dated, but on FLIT MATE.
A. Yes, sir, it is.

Q. So, you don't rely on one individual to look at this, you can page through and look at it yourself?
A. That's correct.

Q. This is on the plotting table?
A. That's right.

Q. And, you can look particularly early on in a problem, for instance this case, a target to the North—-contact to the North and you know you're in here someplace. You get a feel for what the maximum range could be because it'd be on land.
A. Yes, sir.

Q. This picture, why you certainly don't have the exact solution of a contact, the geographic representation is available?
A. Yes, sir.

Q. Where is that available?
A. On the navigation plot. It's also available on the fire control plot.

Q. How about the computer—-the TAC-3 computer?
A. The TAC-3 computer.

Q. Can you tell just a little bit about that?
A. The TAC-3 computer is an add on. TAC stands for, I don't remember—I can't remember. It's a commercially available computer, high capability. Most of our ships are operating in this day and age—-I mentioned yesterday we're going through modernization in sonar. It's really an effort to bring our ships up into the 20th Century in terms of processing capability. A lot of our combat systems are operating on old computing capability to low performance computers. And this stand alone computer that you mentioned was an initiative taken on to bring some high-power computing power onboard the submarine in the form of a commercially available PC to run high-powered algorithms to do target motion analysis, and other functions. It has--it's a multi-function computer. It does many things, but among them is target motion analysis, and in there is another function that cause--talks about--gives you the navigation picture as well.

Q. Okay. I noticed when we toured GREENEVILLE there were a number of flat screen computer screens.
A. Yes, sir.

Q. What gets displayed on those, typically?
A. They have a system where you can, and I can't tell you specifically in GREENEVILLE's, but they took these video flat panel displays have various video inputs. So they can display

on those tactically relevant pictures in large display so that everyone in the Control Room can benefit from that computer display. It could have the video output from the periscope video. It could have that stand-alone computer which is kind of in the back part of Control, not very easily accessible by many people. A lot of ships will run that up and display the output of that computer up on one of those displays so that everybody can see its output. You might have--some of the flat panels are involved with this new sonar system. They replicate the ASVDU for the new sonar system. So you have some flexibility as to what you have portrayed on those screens.

Q. Was GREENEVILLE, to your knowledge, using the TAC-3 computer this day?
A. I do not believe they were using the TAC-3 computer on that particularly day.

Q. With that said—the point I'm trying to make here, just to get you to comment on is, a lot of this information is available, especially to a submarine officer as you know, lives this and breaths this on a frequent basis, and your natural tendency--your instincts are to go look yourself.
A. Yes, sir.

Q. And all these things are available.
A. Yes, sir.

Q. And, you don't rely on any particular one report. Certainly they are used as tripwires or if something changes you certainly would encourage people to make these kind of reports. But the information is out there.
A. Yes, sir. Just from my own experience, if I walked into the Control Room through the front door to the Control Room I would probably first glance over to my left shoulder and look at the Contact Evaluation Plot to see what contacts are being plotted, what course we're on, how long we've been here. A lot of information derived off there.

My next stop as a senior guy that would be over to the navigation plot to see if the ship--how close we are to land, where are we geographically to kind of get oriented. To use VADM Nathman's term, to get some situational awareness. Where are we in the world? What's happening? What direction are we? Are we pointing towards land? I mean we don't—-we haven't talked about that very much, but this is a three-dimensional problem navigating a submarine under water. You can't—you don't

want to be too close to land. You don't want to run the ship aground.

The next stop if everything was working, I'd take a look at the sonar display and see what contacts—-what they really look like in a real time basis. CEP is always a little bit time late, but I'd look up at the contacts to see--the sonar display to see where are they really--what's really going on with these contacts in the last few minutes.

My last stop would probably be over at the fire control screen. I tend to use that last as sort of a—-as I said earlier, an independent verification and then come back. It's by combining all those things together if you get an awareness of what is the ship really doing and what's its situation. You'd always look at the ship Control station. What's happening over there? Is the boat in trim? I mean that's sort of a background thing you can look at that in a couple seconds and understand the trim condition of the boat.

I think the geographic picture here is interesting in a sense that this contact--this data here [pointing laser at exhibit] shows the contact on zero-two-four heading up 15,000 yards. If you really plotted that on a geographic picture you'd show them aiming right for Diamond Head Point--and just a couple thousand yards off, so you'd pretty much recognize—-if everybody put it together on the day in question, they'd say, "Well, that solution isn't very good. That doesn't make any sense." It doesn't make sense that a guy would be going zero-two-four heading right for Diamond Head with the reef right there, that's probably not a good answer. But, you know, that comes from getting the whole picture and the whole overall sense of where the boat is and the whole situational picture in mind and saying zero-two-four for contact, especially for as much time as this is involved, you know, that's a lot of time, he'd be heading up toward land for a long time.

Q. Now each member of the team that does this gets discrete pieces of this--not all the pieces. Who does get—who has the opportunity to have the full viewing?
A. The Officer of the Deck clearly as I say is the head of the team. He walks around and accesses that. And relevant information that's critical—-the best teams work if he disseminates that information to the whole party. You know we're this many miles off land. Now, I asked--I got into this question a little bit about how do they run this on the GREENEVILLE when I talked to the Sonar Supervisor at the NTSB

interview. He frankly says we normally go do a pre-watch tour to go get some of that situational awareness before they take the watch. And that is in the Commanding Officer's Standing Orders, you know, the Sonar Supe and people should walk around and get some situational awareness before they take their watch. They need to know where they are in the world. What's the situation? On this particular day the Sonar Supervisor indicated, “Well, I’d just been out there a little while ago. I didn’t--I cut that out of my pre-watch routine. I didn't go check where we were in the world. I knew we were South of Oahu, but I didn't know how far out or exactly where we were. We had just been out to sea for a little bit of time I didn't think it was necessary to go. But that is a standard practice. He said that a normal watchstation--I've been off watch for 12 hours, I'll come backup and I'll walk through the Control Room and get that same sense of situational awareness before he would take the watch. And then from there on he would stay current with the developing picture as it goes along.

Q. Any sense from a standard of how long these individuals had been a watch in terms of any fatigue that you build in?
A. No, sir, I don't think--I didn't see any fatigue factors. They all seemed fairly fresh. The boat was not doing anything particularly arduous the day before. They had been inport. Some of them had been up a little bit early, you know they had to muster on station, I think, to get ready to get underway five o'clock, so obviously it was pretty short night. They had to be there pretty early. But they--no one expressed any concern about having--I stood a mid-watch or something like that--inport watch section and I was really tired. None of that came out.

PRES: RADM Stone?

MBR (RADM STONE): Yes, sir.

Questions by a court member (RADM Stone):

Q. I have a question on the dynamic between the Commanding Officer of the ship and the Officer of the Deck that has both the Deck and the Conn. As a training point, we train our Commanding Officers that when they're going to be directive and repeatedly give courses and speeds and direction to position the ship--if they're going to be that directive in a given situation they need to loudly announce as you stated, “This is the Captain, I have the CONN.” And the reason we have that is because if the Captain does not do that, this issue of the OOD thinking well, “I'm now just get in line with what the Captain wants and support him on that,” rather than the OOD acting and thinking in an independent manner about how he would do those things. It causes a confusion factor. Not only for the OOD, but also if the Captain doesn't announce it, then the Captain is thinking, “Well my OOD is still thinking independently and he's keeping an eye out.” Would you not agree that that is part of that dynamic because it's not announced?
A. That's exactly what I was trying to describe. The danger--the hazard of executing the ship for a prolonged period of time like that, with the Captain giving a lot of direct orders to the OOD--essentially directing the ship through the OOD.

Q. And my follow-on to that is the other option that we train to is for our Officer of the Deck. If the Officer of the Deck who has the Conn is getting multiple directives from the Commanding Officer, we train the Officer of the Deck that we expect him or her to turn to the Captain and say, "Captain, do you have the Conn?” Now what we have found in our Navy, I think, that's a very difficult thing for very junior Officer of the Decks, Ensigns, JG's, even some Lieutenants to do, during just a normal underway period. Because he's normally asking that question in front of everyone onboard the Bridge or in the Control Room. And depending on the personality of the Commanding Officer, he or she may get an answer back something like, “No I don't have the Conn. If I wanted the Conn I would have taken the Conn by now.” So an Officer of the Deck has to exercise judgment in terms of asking that question and it takes an overt act on his part to asks it.
A. Yes, sir.

Q. Now in a circumstance like that where you have distinguished visitors on the ship--on the boat in a very controlled area, the OOD turning to the Commanding Officer whose been giving a number of directives and asking the Commanding Officer in front of DV'S in a controlled area, “Captain, do you have the Conn?” Do you agree that's a pretty difficult thing to expect a junior OOD to do? If you can't pass judgment on that, please state so. I’m just--from your experience as a submariner, what do you think of that?
A. I—really--to answer that question, Admiral, I think depends on the style--the leadership style of the--the relationship between that Officer of the Deck and the Captain. If he's comfortable and the relationship is good I don't think he would have much problem asking him, in a quiet voice, not making a big demonstration of it, in front of the DV'S, you know, “Captain, do you want the Conn?” And if the relationship is good, I don't think there would be problem. If on the other hand, I can see circumstances with some relationships that I've know between certain Captains and certain officers that that would be an intimidating question. He would be concerned about that question. He may get his head bitten off in response to that question and would be kind of embarrassed. So, I don't know. It's really a dependent answer I think.

MBR (RADM STONE): Thank you.

CC: Sir, I’d recommend we take our lunch recess.

PRES: I believe this is—-before I recess, I believe we're finished with our direct?

CC: Well, sir, we have--RADM Stone still needs to do the direct examination of CAPT Kyle on his Acting Chief of Staff role.

PRES: I understand. Alright. This court will be in recess then until 1300 hours.

The court recessed at 1125 hours, 9 March 2001.

The court opened at 1300 hours, 9 March 2001.

CC: Let the record reflect that all member, parties, and counsel are present. Mr. President, the court has procedural matters.

PRES: Very well.

CC: First, sir, we would like to mark as the next procedural exhibit a letter from Commander in Chief, U.S. Pacific Fleet, to you, sir.

[The court reporter did as directed.]

This has to do with the appointment of additional counsel to represent LCDR Pfeifer. And this is the letter that makes LT Daniel Shanahan, a lawyer qualified under article 27(b) of the Uniform Code of Military Justice, appointed as counsel for LCDR Pfeifer.

Sir, I'd also like to offer as next court evidentiary exhibit, Exhibit 43. This contains CAPT Kyle's data slides, as well as the video that was presented in the morning session, copies of which have been provided to the parties.

PRES: Very well.

CC: Sir, I'd also again like to remind everyone that when you speak for the interpreter, speak very slowly. Speak into the microphone. We had also a little overlap in our questions and answers this morning, and the interpreters again would ask that we wait once we ask our questions, that the witness wait to answer and vice versa. That's all the procedural matters the court has, sir.

PRES: Alright. Counsel for the Parties, any procedural matters?

Counsel for CDR Waddle, party (Mr. Gittins): No, sir.

Counsel for LCDR Pfeifer, party (LCDR Stone): No, sir.

Counsel for LTJG Coen, party (LCDR Filbert): No, sir.

PRES: Let's recall CAPT Kyle to the stand, please.

CC: Bailiff, would you call CAPT Kyle to the stand?

[The Bailiff did as directed.]

CC: CAPT Kyle, would you please take a seat in the witness box? Again, sir, I remind you that you are under oath.

[CAPT Kyle approached the witness box.]

WIT: I understand.

CC: Mr. President, I have just a couple of questions before I turn it over to RADM Stone?

PRES: Proceed.

DIRECT EXAMINATION

Questions by Counsel for the Court:

Q. CAPT Kyle, did your reconstruction efforts as you were attempting to reconstruct the tracks of the EHIME MARU and the USS GREENEVILLE, did they involve any reconstruction of ESM or electronic support measures information?
A. No, they did not.

Q. When you assisted the National Transportation and Safety Board in their efforts to investigate this collision, did you receive any information at all, with respect to ESM, particularly what the EHIME MARU may have been radiating in terms of radars that afternoon?
A. Yes, I--yes, we did receive information. We received information from the Master that indicated that they were radiating on at least one of their radars. They had two navigation radars on the ship I guess. And at least one of them was radiating properly--both radars were spinning, I guess. This fact was also confirmed--I just found this out through my continuing work with the NTSB that the fact that one of the radars was operating was confirmed by the Harbor Pilot who assisted the EHIME MARU leaving Honolulu Harbor, and he had occasion to look at the radar picture on the ship. And the fact of the matter is, the radar was working it was at a close in range scale. And he said in fact, that just before the pilot debarked the ship, the crew of the EHIME MARU had shifted the range scale out to a more distant range scale as would be appropriate leaving port.

Q. Was he able to tell you what range scale it was turned out to?
A. It was inferred--not exactly. It really doesn't matter. All it really does is change the electronic circuitry in the radar. It doesn't affect what the submarine would have detected really--what range scale it was in.

Q. So, the fact that the EHIME MARU was radiating was confirmed by both the Master and the pilot onboard?
A. As the ship left port they confirmed that it was operating. It could have been possibly secured afterwards but I don't know any reason why they would have turned it off. The reason this comes up is we discussed this issue in interviews with the ship's Electronic Support Measures Operators on the boat during the interviews for the NTSB. And the submarine has a fairly robust ESM suite onboard capable of detecting a wide of range radars. In fact, the periscope is equipped with an audio signal that detects radars and projects it in a speaker right there at the periscope stand. And there is a methodology to assess or detect or recognize close-in contacts using ESM systems. So that was a matter of some interest from our standpoint as to was that radar detected during the periscope depth event?

Q. In your reconstruction, sir, you determined that at periscope depth--when GREENEVILLE was at periscope depth, how far away was EHIME MARU at that time based on your reconstruction?
A. It was about 2,400 yards and the range was decreasing.

Q. Giving the type of radar that the Master indicated he was radiating, should GREENEVILLE have been able to detect through ESM that radar?
A. You would think so. ESM radar propagation is subject to some vagaries just like sonar is. There can be skipping, there can be over, you can bypass the mast, it could be ducted away. But under normal conditions, which I think this day was fairly, oh the weather was a little off, little cloudier than normal around Hawaii, but I don't know of any anomalies that would prevent the signal from reaching the periscope. The antenna--ESM antenna on the boat is actually on the very top of the periscope that they were using. And I don't know of any reason why that signal should not have been there.

Q. Would the height of the periscope above the waves have effected GREENEVILLE'S ability to detect that radar from the EHIME MARU?
A. To some extent it would if--obviously if the scope is underwater you would not detect any of the radar signals. It has to be above the water and the higher it is the more likely it’s to be in the radar path of the EHIME MARU. So it would have some effect, although even at a couple feet out of the water, I would think that the ESM would have a reasonable chance of picking up that surface search radar.

Q. How about the time during which the scope is above the water. Is that a variable we should consider?
A. It should be. As a matter of fact, the critical element is as I said a minute ago, the ESM--yes, the time is a factor, but the ESM mast is actually higher than the optical window. So if the optics is above the water the ESM mast is--antennas are higher up. And it's normal procedure when the scope breaks the water the OOD is doing his rapid visual searches at the same time the ESM Operator, who is remotely located from the Control Room--he's in the same space as Radio, is doing a scan of all the ESM bands and there are several bands. There's a large frequency window that we cover. He will cover all the main threat bands where he'd expect to see threat contacts listening for any close contacts and ESM and the Officer of the Deck and the Scope Operator have an equal responsibility to look for and report close contacts.

Our interviews with--our NTSB interviews with the ESM Operator and he had an under instruction watch both--neither one of them say that they had a close contact indicated on their initial search and that is bothersome to me. I have had--the ESM suite on the ship has been checked out materially, it's--all the bands sweep well, except one of the bands, which was a higher band than the EHIME MARU'S radar would have been in. That band showed some degradation. But the appropriate receivers for that--that would detect that radar were within specifications, so I don't know a reason why we didn't detect that on ESM.

CC: RADM Sullivan?

Questions by a court member (RADM Sullivan):

Q. Captain, during your work with and during this investigation, were there any indications that the--were there any indications the periscope when first raised was properly aligned and checked out to be functional? And the ESM by the Officer of the Deck?
A. I don't have that information. The Officer of the Deck declined to make statements to our Board Investigation, so I don't know that it was. However, the Navigator who was on watch before LTJG Coen mentioned that in his earlier part of the day, he did asset the early warning receiver and there's a speaker volume control--what the Admiral is talking to, if you have the volume turned down you can't hear them--the Officer of the Deck can't hear the signals, but the folks in ESM still can. The Navigator said it was turned up and it seemed to be working properly, and it was an all-band. You can band select out

certain bands on the periscope but you'd have one omni band, which basically integrates all the bands at one time. It's a normal procedure when raising the scope to make sure it's set in the proper band. To test it. There's a test procedure to test the early warning receiver when you raise the periscope and you just make sure the volume is correct. And I don't know whether that normal protocol was followed. It is standard protocol. It's seldom missed. It's something we do all the time. It's part of the normal procedure for coming to periscope depth. I don't know when it was done on that day. It's something that we were unable to determine from the—at the NTSB level.

Q. My recollection it's a pretty noticeable test
A. Yes, it is.

Q. So we'll probably be able to find out from more investigation.
A. The people we asked could not remember whether that was done or not.

Q. Finally, were there any--did ESM--the operator in ESM, did they detect any radars considering----
A. Yes, they did. They did say that they had some radars up but nothing close.

Q. So, certainly that implies to me that the antenna was at least out of the water and was sitting up.
A. Yes, sir.

PRES: Admiral Stone?

MBR (RADM STONE): Good afternoon, Captain.

WIT: Good afternoon, Admiral.

Questions by a court member (RADM Stone):

Q. My questions will be looking at your role on 9 February and also a few questions about the role of CAPT Brandhuber on that day. CAPT Kyle, were you the acting Chief of Staff for Commander, Submarine Force, Pacific Fleet, on 9 February?
A. Yes, sir, I was.

Q. Why were you serving in that capacity?
A. The actual Chief of Staff, CAPT Brandhuber, went to sea that morning on GREENEVILLE, and they wanted the senior Captains on

the staff--I was designated as the Acting Chief of Staff for that day. ADM Konetzni was in Japan on travel.

Q. Was your assignment based on a verbal tasking or a written order to assume the duties of----
A. Verbal tasking, sir.

Q. What was CAPT Brandhuber's duties and responsibilities on 9 February, based on the understanding that you had?
A. I understood that he was going to go to sea as an escort officer for the visitors riding the GREENEVILLE.

Q. Was it your understanding that CAPT Brandhuber was serving in the capacity as the Commander, Submarine Force, Pacific Fleet Acting Commander because of ADM Konetzni's absence in Japan?
A. Yes, sir, he was.

Q. And do you know if that was based on verbal tasking or a written order?
A. I don't know.

Q. When CAPT Brandhuber was out at sea did you view him in the light of Navy Regulations as either a Senior Officer Present Afloat, the senior officer present, or as a senior embarked passenger? What view did you have towards CAPT Brandhuber while he was out underway on GREENEVILLE?

Counsel for CDR Waddle, party (Mr. Gittins): Objection, relevance? I was just pointing out that that would be determined by Navy Regulations.

MBR (RADM STONE): I'm interested in the mindset that you had as the Acting Chief of Staff and how you viewed CAPT Brandhuber out at sea?

PRES: ADM Stone would you--counsel comments?

CC: Sir, it is relevant to the issue that the Commander in Chief, U.S. Pacific Fleet, has given to this court to determine and that is the status of CAPT Brandhuber on the afternoon of 9 February and at what capacity he was riding GREENEVILLE.

PRES: Well, I agree with counsel that it will be determined by Navy Regs, but I think the question is relevant though. Your objection is noted for the record. So you can answer the question Captain.

WIT: Yes, sir. Could you ask the question again, sir, one more time?

Questions by a court member (RADM Stone):

Q. As you were back ashore serving in the capacity as the Acting Chief of Staff, how did you view CAPT Brandhuber who was out at sea onboard GREENEVILLE that day? Did you see him as a Senior Officer Present Afloat, senior officer present, or did you view him as a senior embarked passenger?
A. More in the latter. Senior embarked passenger.

Q. Since he was serving at the time as the Acting COMSUBPAC, did you view him also as having the same authority to act as ADM Konetzni would have?
A. No, sir.

Q. Why, may I ask, did you not view it that way?
A. My view of him was as a representative of RADM Konetzni for this group, he was more of a--he was an escort officer. He was not functioning really in an official capacity as Acting COMSUBPAC. He was a personal representative of RADM Konetzni to orient the crew on that day as a senior rider. Any of us--any of the staff officers could have been assigned in that responsibility. It did not require CAPT Brandhuber, per se, to go out and provide that orientation to escort duty.

Q. What were your duties and responsibilities as the Acting Chief of Staff on 9 February?
A. My duties and responsibilities were really to deal with any official inquiries or issues that have effected the staff as a whole or COMSUBPAC. Frequently the staff will get calls from outside activities directed to the Front Office--to the Flag Level and to deal with those calls or inquiries. Any issues or coordination among the staff for any responses that were due or were asked for from the staff that would fall under my responsibility. There were no specific tasks that were imminent or pre-imminent that I had to deal with. CAPT Brandhuber was only scheduled to be underway for 8 hours--6 hours and be back, so there was really no projects that I was directly responsible for.

Question by the President:

Q. So, Captain, I take by your remarks that you saw yourself as a coordinator of any tasks for the staff--to coordinate those tasks for the staff as they came to the Front Office?
A. Yes, sir.

Questions by a court member (RADM Stone):

Q. Did you receive the telephone call about the collision at sea on 9 February?
A. Yes, sir, I did. I had been spending--my particular office is located remotely from the Flag Office, it's in a different building and I had spent most of the day in that office connected by telephone, obviously to the Front Office. The Flag Secretary was basically running the day-to-day activities in the Front Office, taking the phone calls, the routine calls coming in. And about--I don't remember the exact time, it was just before or right around 1400 on the 9th he called me and said, "There has been a problem at sea on GREENEVILLE, the Chief of Staff is onboard and we need your help here in the Command Center." He didn't go into any more details and I immediately left my office and walked 150 yards or so, whatever it is to the Headquarters to get a full briefing on what was going on.

Q. After you received that full briefing, could you describe briefly what actions you took?
A. The—-just a quick understanding of the layout of the SUBPAC Headquarters, the upper level--the upper deck where you enter the door is really the Flag area, the Front Office if you will, and the lower level has the operations spaces and the Command Center is in the ground floor level. It's really a two-story building. You really enter on the second-story.

As a walked in the second-story, I was greeted by the Flag Secretary, Commander Dennis Carpenter, who had been down in Command Center, and he gave me a very quick briefing on what had happened. The fact that the GREENEVILLE had suffered a collision with an unknown vessel. At this point, we didn't know what ship had been--reported a collision, and it appeared that the other half of the collision was sinking and he really had nothing else to report. So I proceeded immediately down to the Command Center, which has all the phone lines, SATHICOM capability, all the emergency response procedures and is really set up to deal with urgent issues at sea.

I entered the Command Center to find that Command Center was fully manned. There were many more people in there than is normally in the Command Center. It was quickly ascertained that it was under the direction of CAPT Bill Winney, who is the COMSUBPAC, Operations Chief of Staff, Deputy Chief of Staff, he was handling communications and giving directions. I got a quick briefing from him on the updated status of what was going on. He said that the ship had sunk--the other ship involved, we still did not know the name. GREENEVILLE was up on the satellite high-com circuit and we were requesting assistance--that the Coast Guard had been notified of the accident and that they were dispatching rescue units out to the vicinity of the accident. I found out the location was about 9 miles South of Diamond Head, and that basically GREENEVILLE was materially intact, not in imminent danger itself, and that was my initial report.

And then I tried to put in my mind what were the urgent issues. I already got the report the GREENEVILLE was basically intact and stable on the surface and the next issue was to try to figure out what's going on with the survivors, were there survivors from the stricken vessel, and what was the status of those folks. We were getting word out to the--most of this conversation was being conducted on satellite HICOM, a satellite voice circuit, trying to ascertain the number of survivors in the water. The report back was there were several life rafts out and that there were no people that had got off the stricken vessel, EHIME MARU, had all made it to life boats, there was no one left in the water.

The next direction out there was to try to find out is everybody accounted for. The GREENEVILLE came back and said they were trying to do that--trying to determine the number of people that were onboard and the accounting for all hands on EHIME MARU, but they were having difficulty because they talked to some people in life rafts and there was a language barrier issue. They were asking everybody on the ship if they had anybody who could speak Japanese and talk to the folks in the rafts. We conveyed that issue to the Coast Guard and said that if there is any Japanese speakers that could go out on the response vessels they should do that because apparently this is a Japanese vessel that was sunk.

About that same time we got the word from the GREEENEVILLE. We asked the name of the vessel--if they saw the name of the vessel, and they came back with the report that the name of the vessel was the Wajima Fisheries High School. They did not--I

think that was actually printed on the side of the ship as a representative of that high school. They did not see the actual hull name on the stern of the ship or it was already submerged. So we tried to figure out what was the size of the vessel--how many people possibly were embarked, and it didn't cross anything, obviously that's not the name of the ship. At the same time the Coast Guard came in and said that the emergency position buoy, the EPIRB buoy that was displayed by the EHIME MARU indicated the name of the ship was EHIME MARU. We were confused about that. We had one name on one hand and one on the other. So we looked up that name on the internet to try to find a vessel of that name. We did find a picture of it, recognized that this ship was not small. That was the initial report sort of coming in from GREENEVILLE that they had thought it was a fairly small ship--may have been a whale watching ship. And the fact of the matter is it's a fairly larger ship than we expected at first. And that started to come together, at least we understood what the name of the vessel was.

Then, I also found out that we had deployed two torpedo retrievers from Pearl Harbor enroute to the site, small craft high-speed, fairly high-speed boats, going outbound. The Commanding Officer of the Naval Support--Naval Submarine Support Command, CDR Irgens, was the OTC of those two retrievers. I felt good about that. I know CDR Irgens very well. He’s very methodical--a competent officer going out there to help.

I'm trying to remember exactly the sequence here. I think that's--about that time is when the helicopter from the Coast Guard arrived on scene. And we also had in the Command Center an open line to the Coast Guard Joint Rescue Center. So we were talking to them on a telephone line, directly to the Petty Officer in Charge there who had immediate feedback from the Coast Guard, so I thought the communication path was very good. We had good communications to the GREENEVILLE and good communications with the Coast Guard.

GREENEVILLE initially reported they had some difficulty talking directly to the Coast Guard, but that was quickly resolved. In a matter of a couple minutes that were talking on VHF communications with the Coast Guard vessels and had an established communications with the helicopter. And the helicopter also confirmed--the Coast Guard independently confirmed they saw no survivors in the water, you know physically swimming around. All of the survivors appeared to be up in the boats. We tried to determine how many survivors there were and in the report that came back that they were greater

than one-four survivors in the boats, but they could not determine for sure because the boats had canopies on them. They couldn't see into them too well.

The next major event that occurred after that was the arrival of the response boats from the Coast Guard and they were able to, I guess early in the process of picking up the survivors, encountered the Captain--the Master of the EHIME MARU, who could speak English. It was then that we found out that there were some missing people, that there were--the initial report was that there were 35 people originally embarked and they counted 25 survivors, that was the initial report. I was later corrected when he—-I think the--as I understand the Master failed to count himself as a survivor, so there really were 26 survivors.

So that word was put out to the GREENEVILLE and they were continuing to search. Shortly thereafter we asked them if they could put people on deck. And they said that they were evaluating that. And shortly--maybe a half hour or 40 minutes into the casualty the local news helicopters arrived on the scene and were relaying live video of the accident site. And it became very apparent to me very quickly that there was no way the GREENEVILLE could safely open after hatch--any of their main deck hatches. And I could see the GREENEVILLE already had their ladder rigged down the side of the sail. And they had quite a few people up on the bridge. It was obvious to me that it was not a good day--it's not a day the GREENEVILLE could really deploy anybody to the water to pick anybody up. It was just too much water going over the back of the submarine.

I think it was about an hour into the casualty, shortly after 1500 local, that--after the Coast Guard boats arrived on scene. And we had a conversation between the Coast Guard and myself indirectly through a phone talker that they--and up until that point, I felt basically responsible for the immediate actions at the scene of the casualty in terms of recovery and trying to get things going and now I felt there was enough Coast Guard assets on site that they should take responsibility for the search and rescue effort. The fact of the matter--after the fact, I found out that they felt in charge the whole time, but I didn't know that. We had a--basically a formal turnover that they were now--I would be falling back to clearly a support role and that they would be in charge of further search and rescue knowing that they're really trained and have the equipment to do that properly in the right search zones and the aircraft were responding to them.

And then we asked for tasking for the GREENEVILLE, told them that their torpedo retrievers were outbound, and somewhere along that time before 1500 there, we did receive a report from the GREENEVILLE of some possible damage to the ship. We knew the damage on the rudder, they reported that right away, they saw that rudder damage, they did not report the skin portion on the port side of the submarine. They didn't see that until they manned the Bridge. But they also reported that the shaft seals, which is a mechanical sealed system back around the shaft of the ship to keep the seawater out, it shifted and that there might be some imbalance in the propeller area--shafting area and that they were limiting their speed to 5 knots. They could probably go faster but they were worried about going any faster than that and that was the only damage to the boat. And that pretty much takes you through the first hour. Do you have any questions about that?

Q. Thank you for that. Did you have any direct conversations with CAPT Brandhuber? Was you tasking you directly with anything?
A. No, he was--I was not talking on the radio at all. CAPT Winney--I felt the best way to organize--CAPT Winney is responsible for the Command Center and he was basically executing all the communications so I let him continue that role. I could hear both sides of the conversation on speaker and what CAPT Winney was saying. So I was just staying in touch with him. I could recognize CAPT Brandhuber was occasionally on the SATHICOM circuit, but he was not--he was providing status, he was providing help, like we need to notify these people, have you sent out this type of information, make sure so and so has been informed, but he was not asking, he was not giving any direction. CAPT Brandhuber was not giving any direction or trying to take charge of the SAR effort from his location.

Questions by the President:

Q. Captain, I take from your comments then you saw that as filling in the blanks of the OPREP-3?
A. Yes, sir, and just things that he was sensitive to and he made sure that--for instance, that various commands like Naval Reactors and so forth were informed of the casualty who might not pop up on the list of the original response.

Q. In the Command Center are there some written procedures that you open up a notebook and you follow in the event of a casualty such as----
A. Yes, there's a Search and Rescue Procedure, there's a Collision Procedure and I saw that that was--there was somebody over there managing that checklist. It was--there was a lot of busyness, a lot of talking going on, but it was fairly well organized. I was very comfortable. I thought that everybody was well employed and helping.

Q. Okay. Did you keep a log of the radio and message traffic? Is there an Op Center Log that tracks the flow of information between GREENEVILLE and SUBPAC?
A. There was an open mike tape recorder maintained of all the conversations and that was later transcribed. If that's not been provided to the court it's available from SUBPAC.

MBR (RADM STONE): I'll ask the court--counsel to get that for us.

CC: Yes, sir.

Questions by a court member (RADM Stone):

Q. How well do you assess the USS GREENEVILLE did in reporting and maintaining communications during the SAR effort?
A. I think they did fairly well. I think their report was timely--I wasn't there as the casualty broke, I came about probably 10 minutes or--between 5 and 10 minutes after the actual initial report. There was, as we know now, the collision happened about time 43, I was notified time 55 or 56 somewhere in that time frame. So that's pretty--that's not a lot of time delayed to get the word to me. I don't remember the exact time of their initial report, I think it was 3 to 5 minutes after the casualty, which is--you know, I think that was pretty prompt.

Q. Do you know how long it took for you to notify COMSUBPAC, the command, to notify the Coast Guard; approximately how many minutes did it took?
A. It was only a few minutes afterwards. It was a phone call made down to the Coast Guard, JRCC, it’s in the log. It was very short, a minute or two. It was very close after the initial report.

Q. You've already described what actions GREENEVILLE took in response to the collision. Overall, what's your opinion did in the overall SAR effort? Is there anything more she could have done in your opinion?
A. Again, not so much as my role as the Acting Chief of Staff, but more in the role of the Navy representative to the NTSB. The NTSB did a fairly thorough investigation of the search and rescue procedures, that was one of their main focus area, so I participated a lot in the discussion in that area and I really think GREENEVILLE did about everything she could do.

They manned--they were making preparations to open the deck hatches. They had swimmers decked-out with proper swimmer safety appliances within a matter of a minute or two. They expeditiously manned the bridge to conduct a lookout for survivors. They basically got up there about as fast as they possibly could. There is a protocol to go up there, they have to equalize pressure, you have to make sure the ship is secure on the surface before you open that hatch for safety of the GREENEVILLE to avoid sinking her, went through that process about as fast as you could and safely got up there. They put extra watchstanders on the bridge. They rigged a ladder over the side, so that if they needed to put a diver in to help someone that was floundering. They had divers up on the bridge. In very short order, they had lookouts posted with binoculars. They manned both periscopes. They were doing a continuous search of the water area for survivors in the water.

The plan was clear that if they found someone floundering, that they would deploy a diver to help that individual to one of the several lifeboats that were in the immediate vicinity. The plan was very quickly abandoned to try to bring them back to GREENEVILLE, which I think was a wise decision based on sea state. You have a good lifeboat over here. They did try to go along side one of the lifeboats. And the waves between the lifeboat--reflections off the hull of the submarine almost caused the lifeboat to capsize, so they kind of had to standoff a little bit and hail in to the lifeboat trying to find out the number of survivors.

They were contemplating a plan. If they had to recover someone to the boat, how could they do that? Some rigging method off a mast or antennae which is kind of a last resort approach to try to recover someone to the boat. So I think based on my knowledge, not just as a Chief of Staff on that particular day, but in the subsequent investigation, I can't think of anything they could have done better from their standpoint.

Q. Who made the decision to keep GREENEVILLE out overnight on the night of 9 February? Why was that decision made? Was ADM Konetzni involved in that decision?
A. I'll tell you my initial inclination once the Coast Guard was there and I looked and I could see the sea state, I recognized that GREENEVILLE was not a particularly good SAR platform. They could do some searching, but there's no recovery. My initial inclination was to try to bring her back to port that afternoon and that was the direction I was trying to head. I was moving along that direction thinking that there was enough--there was plenty of, you know, better SAR platforms out there.

That decision and that direction was overridden by CINCPACFLT. ADM Fargo directed that GREENEVILLE stay out until properly relieved by other Naval vessels and they were in the process of sortying the SALVOR--USS SALVOR, and USS--one of the cruisers the--I think it was the LAKE ERIE, was in basically in the ready status for this type of event and they were getting those ships underway and until they were out and providing--augmenting the search and rescue effort, they wanted GREENEVILLE to remain there.

The reason I was kind of interested in moving them back is because we were at the point where if we didn't bring them back, we would have to bring them back at night and with the stress that they'd already incurred on the boat--in the process of the initial reporting, I found out a couple other things. One, that they had been, had left a significant number of their crew members ashore so they were--I think there were 38 folks--crew members that were not at sea with them, so I wanted to make sure that they had enough people to maintain a competent watch overnight and got they got the affirmative from the boat that they had enough watchstanders and they were in good shape.

But, I wasn't really comfortable bringing them back--after this traumatic experience--bringing them back up Pearl Harbor channel at nighttime. I didn't think that was a--that was something that they really want to do, that’s not something we practice all the time, but we can do it, but it is added stress, added risk. So, if we didn't bring them back, they were going to be out overnight. And I knew, one thing I did know out of the conversation that some of the visitors--I guess the best way to put it, there was some mild hysteria among some of the visitors who were onboard. CAPT Brandhuber had related that to us that they were very uncomfortable, and worried, concerned as you could well understand.

So, I was kind of leaning toward bringing them back and I wanted to do it, but as I say, that was overridden by CINCPACFLT. We decided to keep the ship out and I didn't want to bring them back at night, so we waited until the morning.

To answer the second part of your question, we were on the phone with ADM Konetzni in Japan and he said he agreed with that, don't bring them back at night, bring them back the next morning at a reasonable time. You know, not first light necessarily, but at a reasonable time the next morning would be a good opportunity to bring them back.

Q. Could you say a few words about how effective you think a submarine of GREENEVILLE's class is at conducting SAR, any difficulties that are inherent in the submarine and anything that can be done to improve those capabilities that you might recommend? That is my final area of questioning.
A. Sir, the submarines in general are very--not tremendous SAR platforms, very low freeboard, slower to put anybody on deck in any kind of sea state other than flat calm is--in open ocean is a hazardous event. I mean it is really a risky thing. So it's difficult to get down to the main deck. Which leaves you with a dilemma of how do you recover someone who is in trouble or injured or--you know, is in some way incapacitated afloat in the water, how do you get them up the sail? Then you get to the sail and then you have to get down through a fairly torturous ladder path back into the hull of the submarine, it is not an easy path even for a person physically fit in great condition, so recovering folks from sea while the ship is in open ocean is a very difficult proposition. It’s not got a very big Bridge--small cockpit. There is not a lot of space up there where you can put people to look. You got the two periscopes, which are limited in view. You can look, I mean it is as good as you can get as far as looking for folks, looking for survivors, but recovery of them is difficult.

And the other thing is the ship itself is fairly--it is designed for submerged transit, it’s not highly maneuverable on the surface, it’s not what you would call a precision, easy to drive on the surface to backup and stop and--you know, backing bells are very difficult to control. You have an outboard motor to help--a thruster kind of thing to help position the stern of the ship, but it is not what you call extremely maneuverable on the surface.

So to answer your question, "What could we do better?" I thought about this quite a bit since the accident and perhaps there is

something we could do to build in some sort of facility to recover people to the deck, to the Bridge in sea states where you could put people on deck. You know, some way of rigging people up safely. I think that would still be very hazardous because the boat is rocking and rolling and then put somebody in a harness or something they would be slamming on the side of the boat on the way up, but we ought to have as a last resort some sort of installed mechanism to do that I suspect would be one improvement we could do, but that would take further evaluation.

MBR (RADM STONE): Thank you, CAPT Kyle.

Questions by a court member (RADM Sullivan):

Q. I just had one question. You just testified--or at least I think what I heard was, you were in communications--telephone communications with ADM Konetzni?
A. Yes.

Q. And he was giving you some--giving you as the Acting Chief of Staff some direction? Do you feel that he was basically acting in his capacity as the Commander?
A. Yes, sir.

MBR (RADM SULLIVAN): Thank you.

PRES: Counsel, I think that concludes our direct.

CC: Yes, sir.

PRES: Captain, we are now going to move to cross-examination.

WIT: Yes, sir.

PRES: Counsel for CDR Waddle?

CROSS-EXAMINATION

Questions by counsel for CDR Waddle (Mr. Gittins):

Q. CAPT Kyle, let's start with where you finished up and then I'll move back to the beginning of your testimony.
ADM Fargo is a submariner by MOS, correct?
A. Yes, sir.

Q. Presumably, he would be familiar with the limitations of a SSN in the SAR role?
A. Yes, sir.

Q. Did he give you any reason why he wanted GREENEVILLE to stay out given that it had little utility in the SAR role with the Coast Guard on station?

PRES: Counsel, can I interrupt for a moment here. I think we got the microphones but, if you guys both turn them off or both turn them on you're--there you go, thank you. I think we're okay.

Q. Do you recall my question?
A. Say it again, please.

Q. When you spoke to ADM Fargo or his staff, whoever it was, were you given a reason why there was a direction for GREENEVILLE to remain out at sea given its limited utility in the SAR role with Coast Guard vessels on scene?
A. The impression I got was he wanted to--he wanted to maintain whatever presence he could with Naval forces to assist in the search and rescue and GREENEVILLE was obviously there already. He was in the process of sortying two other Naval vessels to assist, that were better SAR platforms, but there would obviously be a time delay between their departure and arrival on scene.

Q. With respect to your opinioned testimony about CAPT Brandhuber's role--when you assumed the duties as acting Chief of Staff, CAPT Brandhuber was the acting Commander, Submarine Forces Pacific, correct?
A. The----

Q. To your knowledge was--when ADM Konetzni traveled, did he turn over as Acting Commander, Submarine Forces, Pacific, to CAPT Brandhuber?
A. Yes, he did. Yes, CAPT Brandhuber was in charge, until that morning, of day to day operations and made operation decisions for operations of the submarine force in the Pacific, yes.

Q. Did CAPT Brandhuber turn over to you the duties of Acting Commander, Submarine Forces, Pacific?
A. Not directly.

Q. Did he prepare any memorandum transferring the duties of Commander, Submarine Forces, Pacific, to you or anyone else on his staff to your knowledge?
A. To my knowledge, no.

Q. With respect to your testimony about CAPT Brandhuber escorting distinguished visitors onboard the GREENEVILLE, I believe you testified that any staff officer could have taken the distinguished visitors onboard the GREENEVILLE, correct?
A. Yes, sir. And what I meant to say or what I was trying to infer in that context was any of the senior--typically a responsibility of one of the--taking the--distinguished visitors that would be a responsibility assigned to one of the senior staff officers.

Q. In this case CAPT Brandhuber went because the distinguished visitors that were embarked on USS GREENEVILLE were the--were sponsored by ADM Macke, is that true, sir?
A. I don’t know. I don't know why--I remember a discussion. I remember this debate in his mind about going or not to go and I don't know what made is mind up that he was going to escort this group. I was not a party of that discussion. Didn't really--wasn't of interest to me. I didn't pay attention to it.

Q. Was the original plan was for ADM Macke to go on this distinguished visitors cruise, isn't that true?
A. I don't know that.

Q. You don’t know that either. Okay, although any staff officer could have taken the distinguished visitors aboard USS GREENEVILLE, CAPT Brandhuber, who was then acting Commander, Submarine Forces, Pacific, decided it was he that should do so, correct?
A. I assume that’s what he decided.

Q. That is what happened, isn't it?
A. That is what happened. I don't know who made that decision that it was going to be CAPT Brandhuber, whether he consulted ADM Konetzni or whether there is any other discussion with anyone else about that, but it became a foregone conclusion when I found out that he was underway on--going underway on Friday.

Q. And when CAPT Brandhuber embarked on USS GREENEVILLE, he did not formally relieve--did not formally relieve himself of the duties of acting Commander, Submarine Forces, Pacific, either formally or informally to your knowledge, correct sir?
A. Not to my knowledge, there was not a formal or informal the way--to be honest with you the--I was informed by the Flag Secretary, who works for--CDR Carpenter, on the morning of February 9th that I was in fact, the Acting Chief of Staff. How he was informed of that or how I was designated specifically on that, I'm not sure. I said that's fine, I can understand what's going on, he's underway for 8 hours. I understand, but there was no formal turnover between CAPT Brandhuber and me.

Q. So the answer to my question was no, correct, sir?
A. Yes--no, yes.

Q. And sir, I would like to turn your attention to the reconstruction, the first part of your testimony given throughout this morning. The reconstruction that you formed was done with the sonar logger data, correct?
A. Yes, sir.

Q. Is that also known as SLOGGER?
A. Yes.

Q. Prior to the reconstruction involving the USS GREENEVILLE, SLOGGER data had never been used before to reconstruct an accident, correct, sir?
A. That's correct, At least in our--yes, I would think that is a safe bet, Its not been used on our coast and I don't know of any accidents that would have been investigated since the advent of this equipment.

Q. What use had SLOGGER been put to for reconstructions prior to GREENEVILLE other than accident reconstruction, sir?
A. To the best of my knowledge on our coast we had never used it before this event for any kind of reconstruction effort.

Q. So this was the very first time for tactical reconstruction or accident reconstruction that SLOGGER data had ever been used?
A. That is correct.

Q. And it would be fair to say then that you have no empirical data to assess the accuracy of reconstructions using the SLOGGER data, correct, sir?
A. No, I wouldn't say that because we have empirical data on reconstruction's in general and we use data equivalent to what

is in the SLOGGER to do those reconstructions, except that we don’t have as much of it, it doesn't come at 1 second intervals. We had no recording system that delivers that information at that interval, so we had copious amounts of data that we could feed into these reconstruction algorithms and for--available for consideration, which clarified the situation more so than any of our previous effort using the same sorts of data only not as much of it.

Q. Would it be fair to say then that you had no procedure in place to use SLOGGER data for accident reconstruction?
A. No, I couldn't say that either. The SLOGGER data--we had the algorithms used for reconstruction and are--will take any data--as much data as you have. It will take whatever data you put in, the course, speed, bearing and range slots--in the programs that generate these tracks. The more data you have, the more resolution you have in the reconstruction, so it is just a matter of--it is just a different source of data used in the same algorithms that we've used and have a lot of confidence in from previous reconstruction efforts.

Q. How long did it take you before you were able to come up with any output at all?
A. It took us a couple days--in fact, because of my involvement in the NTSB effort, I was diverted and I was focused on other areas of the accident--investigation until--I don't remember exactly. The accident occurred on Friday, I believe it was like Monday or Tuesday until we came around to discussions with the crew of the GREENEVILLE and the first group we were going to talk to of the crew of the GREENEVILLE was the Sonarmen and I asked before we did the NTSB interviews with the Sonarmen to have the logs available, so they could refer to those logs while they were giving their testimony to the NTSB.

When I walked into the room for the interview, I looked at this big stack of paper, which is generated by the SLOGGER, the automated sonar logs and I--it just dawned on me. I said, “Oh my gosh, the SLOGGER data is here.” That was when I investigated the availability of the SLOGGER data and found that, in fact, some of it had already been decrypted and given to ADM Griffiths for part of his preliminary investigation--some of the data that was available. It was at that point in time that I mobilized my data analysis reconstruction group to acquire all the data out of the SLOGGER for this reconstruction effort.

We needed some help from--we really had no--some of the data that's logged in the SLOGGER data is not--was not designed for ready access to crew members. It was basically--what we had procedures for was to generate these logs, these automated logs. We had to go to the contractor as the Naval Sea Systems Command to get the procedures for downloading the data that was stored on that hard drive, so that took a little bit of time to get those protocols, download from a hard drive to a digital tape, digital tape then had to be read and then it was read right into an Excel spread sheet for common use and then from there it's just a big pile of data, it was inserted into the reconstruction algorithms. So, it did take a little bit of time until this data was really ready for use in reconstruction.

Q. A minute ago, I asked you, sir, if you had a procedure for using this data in the reconstruction. Your testimony just a moment ago indicated that you do not have such a procedure that you had to go to NAVSEA to determine how to download the data to make use of it. Is that correct, sir?
A. No, the question you asked me was whether we have a protocol for using this data and we do----

Q. The SLOGGER data, sir?
A. The data, once I have the data in hand----

Q. The SLOGGER data, sir?
A. I have a procedure for using data in a reconstruction effort. We had to get a procedure to interpret and get that data from the SLOGGER----

Q. So you did not have a procedure for the SLOGGER data?
A. Correct.

Counsel for CDR Waddle, party (Mr. Gittins): Thank you, sir. If I could have the slide that displays system solution versus displayed solution, it is entitled USS GREENEVILLE's Sierra 13 versus reconstruction.

[LCDR Harrison did as directed.]

Q. Sir, at the time 13:14:02, GREENEVILLE's Fire Control Technician entered a system solution for target Sierra 13, correct, sir?
A. Yes, looks that way.

Q. Do you have any reason to believe that that does not represent an entry of a system solution by the Fire Control Technician from the USS GREENEVILLE, sir?
A. It looks like--I can say that he entered a new solution right, whatever time that corresponds with this jump from this point to this point [looking at slide]. I can't figure out the exact time with that scale and I don't remember the exact time that he made that switch, but I'll--if you have it there as 1314, it looks about right.

Q. The SLOGGER data as you indicated collects data at 1 second intervals, correct?
A. It collects data on own ships performance at 1 second intervals, but it samples the solution data at a very----

Q. At 20 second intervals?
A. 15 or at operator selectable to default to 15 seconds.

Q. Do you know what the operator selection was on GREENEVILLE on this day?
A. I believe it was 15 seconds.

Q. 15 seconds, yes, sir.
A. So what that does is it--it will--every 15 seconds it will pull the system solution for any contact being tracked by the sonar system at that time.

Q. For this solution, that required an operator entry, correct sir?
A. To go from here to here required an operator entry [pointing laser to exhibit]. These dots--once this solution was changed to this value the sonar would record that and go and grab that solution every 15 seconds without any further operator action.

Q. But to make this jump here [pointing laser at exhibit], that required the--that's the button push that you discussed earlier?
A. Yes, that's the--I believe and this is the best solution. This solution entry button push.

Q. Now before the operator pushes that button, the operator manipulates some data, correct, sir?
A. Correct.

Q. Please tell the members about that.
A. Essentially the system solution up until this point--the system archives--system of records solution is represented by this data and I don't--I can see what the range is, but I don’t

know what the course and speed was. I don't remember what that value was. At some point in time he goes--he calls up Sierra 13 on his screen and he looks at the data there and he says I don't think there is good correlation between the sensor bearing and the generated bearings on that particular solution that is displayed there, it's not fitting very well, it's not tracking the contact properly, so he'll go in the trial mode and he adjusts the proposed or trial course, speed, or range, or a combination of those.

Course and speed can be ganged together on one parameter variable and until he gets what looks like a better correspondence and generated bearing over the time history that he has displayed there. Once he feels he has a better fit of data, he would go to the enter system button to update--to make this change from this solution to this one.

Q. For instance, the operator puts a cursor on the data presented on the fire control panel, correct?
A. He has a--what he really does--it is a cursor, but his process is called MATE analysis and he's really trying to bound a set of data that he's trying to work with and then he will adjust the trial solution, course, speed and range to make that--make the data conform to a solution that the--the sensor data conform to a generated solution by the fire control system. To make a solution that looks consistent with the sensor data. Once he's satisfied that he has correspondence--agreement between those two aspects--it is better than it was before, he'll update his system solution is the normal process.

Q. In this case, based on the reconstruction, it appears that 15,000 yards is the--was an accurate representation of Sierra 13 at time, approximately 13:14, correct, sir?
A. Yes, in range.

Q. In range?
A. I can't say that his course and speed was accurate. In fact, I know in the fact looking at the sonar data it wasn't accurate and he was--had it on an opening course and opening speed. Speed was about right, coincidentally, but his course was opening.

Q. Speed was 11, correct? That was the system solution computed at speed of 11?
A. Course zero-two-four.

Q. And the bearing data, which was collected here [pointing laser at exhibit], sir, on the left-hand diagram, the bearing data was accurate because that comes from Sonar, correct, sir?
A. That's the sensor bearing itself, that's what sonar is. That's correct.

Q. So, at time 1314 approximately, the system solution for Sierra 13 was accurate in both bearing and range, correct?
A. Correct.

Q. And speed, correct, sir?
A. Coincidentally the speed was correct, yes. I can't tell that from the plot. I just know that from other--from my review----

Q. From the SLOGGER data, correct?
A. From my review of the data.

Q. The pile of data you were given for the time 1314 or what--and I recognize that you don't know the specific time, but I'm telling you that is 13:14:01, sir, would indicate course, speed, range, and bearing, correct, sir? And more than that, in fact.
A. The course--the course was not right.

Q. But it indicated a course in the data, correct, sir?
A. Yes, it did.

Q. And what was actually reflected in the data was what's called a flip course, correct, sir?
A. Yes, essentially that's what it was.

Q. And what is a flip course, sir?
A. It would be helpful to go to a different display to----

[LCDR Harrison changed exhibited.]

Q. Is that the arrowed----
A. With the arrow display--if you can find the right slide here, that one.

Q. Is this known as the line of sight display here, sir?
A. These are line of sight displays and essentially----

Q. It—it, sir--I just need to describe it for the record. We are talking about the expanded time bearing slide that has the arrows depicted on the right hand side. Continue, sir.
A. This is a line of sight display and I'll explain what this means. This blue arrow is a representation of own ship's course and speed, GREENEVILLE in this case, this is a bearing line to the contact in question, zero-two-zero, and this is his course-- the contact's course.

To match the bearing rate at any given instant, any course that has the right speed, if you break this vector, this arrow, into two components, across and in the line of sight, this is across the line of sight, in the line of sight, if the speed is correct for the contact across the line of sight, the bearing rate will match what you are looking at on your sensor, and as you can see, well let's assume this matched the bearing rate right here, this particular aspect looks good, you could--you could achieve the same matching of the speed across the line of sight, if I had this arrow pointing up this direction in an equivalent manner opening with the same speed across the line of sight component. You'd have a course error, but everything else would be right. The bearing rate would match, you could have a range matching, you'd have the course wrong, you could have the speed correct but, it's a flip course, it's going in the other direction. In fact, the fire control system is designed for easy evaluation, because there is some ambiguity here, there is an easy method of evaluating flip courses, there's a button on the display that says show me the flip course and the machine will automatically go to the flip course, match the speed across the line of sight and let you evaluate the long-term correspondence of bearing, sensor bearing versus solution bearing, for the flip course versus the course that you're trying. And you could look at that and say, “Do I like the flip course better or worse than my trial course?”

Q. Yes, sir.
A. And that's what a flip course is.

Q. Thank you, sir. Now in respect to Sierra 13, sir, based on the data available for Sierra 13 at the time 1314, the range was within 10 percent of the actual range. Correct, sir?
A. Yes.

Q. The speed was exactly what the actual speed of the EHIME MARU was. Correct, sir?
A. Yes.

Q. The course was a flip course?
A. Yes, apparently.

Q. Apparently, yes, sir. And there have been approximately 45 minutes of data available as to the bearing for the target. Correct, sir?
A. Yes.

Q. Would you say, sir, that it would be reasonable to say that the display solution would make sense if reviewed, given those parameters?
A. It would make sense when--you have to ask--you have to answer that--ask me that question from a times perspective. At 1314?

Q. Right around 1314 or 1315, sir. Would that solution make sense to someone who reviewed it at about that time?
A. It would look--it would look reasonable at 1314. The only thing that I would say--the only caveat I'd put to that is that if you think about the geographic position, in the world, if you had situational awareness, you'd say "Why would a contact be heading straight toward Diamond Head at that location?" And that's the only thing that would say "hmm." And that course--that might course as being reasonable.

Q. And I'm glad you brought that up, sir. At time 1315 isn't it true that GREENEVILLE was 12 nautical miles from land?
A. I don't know that.

Q. You don't know that. Would it surprise you to learn that GREENEVILLE's position, based on your reconstruction, placed GREENEVILLE at 12 nautical miles from land?
A. No, I wouldn't be surprised.

Q. This range 15,000 yards is 7.5 miles, correct, sir?
A. That's correct.

Q. If you subtract 7.5 miles, the distance between GREENEVILLE and the target, that's Sierra 13, that leaves 4.5 miles from Diamond Head, correct?
A. That's correct.

Q. Is it your testimony here, sir, that vessels do not operate in and around 4.5 miles off of Diamond Head?
A. No, I'm not saying that. It's possible but it being somewhat suspicious, it's not that common that a ship would be at 4.5 miles off Diamond Head heading toward land further closer

in. I mean, I wouldn't reject the solution out of hand, it would be a question in my mind. That doesn't make sense. In fact, it would cause me to think about the flip course and say, it makes more sense that he's out bound. I'm just saying that that's the only aspect of that that would say it was not--didn't pass the reasonability test, it's a doubt.

Q. What, if the information that Sonar have derived indicated that it was a small craft, a preliminary classification of small craft? In that circumstance, would not be reasonable, sir, for a small craft to be opening toward Diamond Head at 4.5 miles?
A. That's fine? That would be reasonable.

Q. Now at time--where the second fire control solution where the button was pushed by the fire control of--Fire Control Technician of the Watch, the time looks like about 1337, is that about right, sir?
A. Yes.

Q. The ship had been--was maneuvered in here.
Correct, sir?
A. 1337 is up here.

Q. I'm sorry. At 1337 in here [pointing laser at exhibit] that's where you--where you indicated earlier that there was a turn that drove the bearing rate.
Correct, sir?
A. Right here [pointing laser at exhibit], I'm almost positive those bearings are what forced this solution in.

Q. That way?
A. Yes. Perhaps some of these [pointing laser at exhibit] but there's not much good track data here, sensor bearing, this high-speed maneuver, I don't think those bearings are very--I think that----

Q. The tracker tracked off over here correct?
A. Yes. He probably integrated through those and disregarded those bearings, I would guess.

Q. And when GREENEVILLE completed this turn, Sierra 14 popped up correct, sir?
A. Yes. That's about the time it did. It came up to 340, Sierra 14, that drove Sierra 13 to the right and probably unmasked Sierra 14.

Q. And in fact your CEP, reverse CEP plot indicates that Sierra 14 did appear after that leg.
Correct, sir?
A. That's correct.

Q. Wouldn't you agree, sir, that this solution, at 1337, the Fire Control Technician of the Watch probably had that solution for some period of time prior to actually hitting the button?
A. Yes, sir.

Q. At 1334, right in here sir.
A. Yes.

Q. The SLOGGER data indicates that the Fire Control Technician of the Watch was computing an additional solution--obtained an additional system solution for Sierra 14, correct, sir?
A. Yes.

Q. Do you recall the data?
A. No I don't.

Counsel for CDR Waddle, party (Mr. Gittins): Just a moment, sir.

PRES: This is important, make sure you get it right.

Counsel for CDR Waddle, party (Mr. Gittins): Yes, sir.
[Reviewing exhibits.]

Counsel for CDR Waddle, party (LCDR Young): I think it's 22.

PRES: Maybe it's a different exhibit.

CC: Mr. Gittins, this is the exhibit that you have previously introduced, correct?

Counsel for CDR Waddle, party (Mr. Gittins): Yes, sir. I believe it's 22. Labeled at the top CEP in color--it's a color slide, Exhibit 22, sir. If you'd please provide exhibit--bailiff, please provide Exhibit 22 to the witness and bring back my copy, thank you.

[The bailiff did as directed.]

Counsel for CDR Waddle, party (Mr. Gittins): Sir, Exhibit 22, which I think I have provided the members a copy of Exhibit 22,

indicates that after the leg, the first leg of the baffle clearance, Sierra 14--Sierra 13 is driven to the right and Sierra 14 first appears. That occurs at about 1333 time the first time that Sierra 14 is identified.
Correct, sir?
A. Yes.

Q. And the system indicates that from 1334 to about 1335 the Fire Control Technician of the Watch was working Sierra 14 is that accurate, sir?
A. Ask that question again, please.

Q. Yes, sir. The SLOGGER data indicated that between 1334 and 1335 the Fire Control Technician of the Watch was working Sierra 14 as his primary contract of interest, correct, sir?
A. I can't make that determination.

Q. Well, sir, the SLOGGER data would indicate that----
A. All I can tell from the SLOGGER data is he entered a system solution at the time 1333--additional solution. I can't tell from SLOGGER data which contact he was working on.

Q. The SLOGGER data actually provides system solutions for each contact, correct, sir?
A. Yes.

Q. And it would show when the system was updated?
A. The only way you could tell if its updated is there's a discrete change in the solution.

Q. Exactly. So if there's a change in solution from--for example at 1334, the initial solution of 8,000 yards, course 195, speed 12, that would indicate that the Fire Control Technician of the Watch was working Sierra 14 at that time, correct?
A. Yes.

Q. And then at 1334:48 Sierra 14 was updated to 11,000 yard range, course 337, speed 12, that would indicate that the Fire Control Technician of the Watch was working Sierra 14 not Sierra 13, correct, sir?
A. Yes, it would.

Q. And if at 1335 the Fire Control Technician of the Watch updated Sierra 14, flip course, to 10,000 yards, course 197, speed 12, that would also indicate that he was working Sierra 14 and not Sierra 13, correct, sir?
A. Yes.

Q. And that would indicate that Fire Control Technician of the Watch was possibly distracted, but working another issue rather than Sierra 13, correct?
A. That would be part of his normal duties. You have contact, you would try to resolve that new contact.

Q. So it would be appropriate for the Fire Control Technician of the Watch to, when presented with a new contact, to divert his attention to that new contact to make--to ascertain whether it is a threat to the vessel?
A. Yes.

Q. And when I say the vessel, I'm talking about USS GREENEVILLE, sir.
A. Yes.

Q. The next system update for Sierra 13, sir, according to SLOGGER data, is 1337:48 which is where the button is pushed----
A. Yes to go down there.

Q. 1337.
A. Range in.

Q. So it would appear that for some period of time, the Fire Control Technician of the Watch was working Sierra 14 and then returned his attention back to Sierra 13, correct, sir?
A. And that would be normal practice.

Q. Did you interview the Fire Control Technician of the Watch, sir?
A. He was interviewed by the NTSB. I was not at that interview.

Q. Did you review the information he provided to the NTSB?
A. Yes, I did.

Q. And he indicated that it was his recollection that at the time of the collision that Sierra 14 was the contact of interest, correct, sir?
A. Yes. The contact--when the contact was gained by sonar, it became the focal point of the contact evaluation, because they were in the process of conducting their baffle clear to go to periscope depth, gained a new contact in the process, and that--that is pretty customary. You have an hours worth of data on Sierra 13, and we have this data we have to resolve on this new contact. We would focus on that one first, to get that one kind of resolved before we move back to 13.

Q. Isn't it true, sir, that the Fire Control Technician of the Watch did not begin working--re-working the solution for Sierra 13 until after USS GREENEVILLE had departed 150 feet, starting up to periscope depth?
A. I don't know that for a fact.

Q. Sir, would you agree with me that that would be an important fact to know with respect to this investigation?
A. Yes it would.

Q. And, that would be a fact that would be attainable from the SLOGGER data, correct, sir?
A. You could infer--you can infer--you can't determine it precisely from the SLOGGER data, because all you can say is what-- somebody entered that solution. You can't tell exactly when he went from one contact to another on his MATE display. You can maybe infer, if no one else entered solutions on any targets, any contacts, then you can infer--if the FTOW was the only one entering system, none of the other folks in Control were operating the fire control system, then you can say, the last time I worked Sierra 14 and the next time I worked on Sierra 13, somewhere in-between there, he probably shifted from one contact to another. And, exactly when that was--it--in all probability, it happened immediately after he updated Sierra 14, he would say, "I'm satisfied with 14. I'll go with the next target and take a look. But, I can't tell you, and there's no way to really ascertain exactly when he shifted screens--shifted contacts in that--in that evaluation.

Q. But, you would expect that if the system demonstrates that Sierra 13 was being worked, that time less than 100--when the ship's depth was less than 150 feet, that would suggest the ship had already departed from 150 feet to periscope depth?
A. Yes, it does.

Q. And, the SLOGGER data does, in fact, capture a ship's depth as one of the parameters----
A. Yes, it----

Q. Reported at 1-second intervals, correct?
A. Yes--yes, it does. I don't have--if you have the data--I don't have the SLOGGER data in front of me here, to go back and take a look at it, but the last update--the last update on Sierra 14--the last--when it was discreetly changed, I--I don't have that data memorized, when that last change happened.

CC: We'll see if we can't pull that up for you, sir. May I have Exhibit 23, bailiff? Please provide to the----

[The bailiff did as directed.]

Q. Sir, Exhibit 23 was created from the SLOGGER data, provided by the--to the Court of Inquiry, I think by yourself. That indicates that 1337:48 Sierra 13 was updated 4,000 yards, correct sir?
A. Yes.

Q. Course one-four-one. Speed 8?
A. Yes.

Q. And that the ship was at 103 feet, correct, sir?
A. Correct.

Q. That is after the USS GREENEVILLE left 150 feet for periscope depth correct, sir?
A. That's correct.

Q. And from the time the OOD says proceed to periscope depth, quiet is required to be maintained in the Control Room, correct, sir?
A. That's correct, unless there's some emergency situation or there's some urgent report to make.

Q. Yes, sir. So, the data that's not plotted in the materials you provided to this court indicate, in fact, that at the critical times, in the evaluation of Sierra 13, a new contact was identified, Sierra 14, correct, sir?
A. Yes.

Q. And, that the Fire Control Technician of the Watch diverted his attention, as he was required to do, to work Sierra 14, correct, sir?
A. Yes.

Q. And, that, again, at a critical time, 13--time 1337, the Fire Technician--Fire Control Technician of the Watch entered a system solution that provided a solution 4,000 yards, correct, sir?
A. Yes.

Q. And, that would have been a solution that you would expect should be reported to the Officer the Deck and the Commanding Officer, correct, sir?
A. Yes.

Q. And, in fact, when going to periscope depth, the Officer the Deck is required to maintain his station near the periscope, because he will--he begins looking through the periscope before the vessel comes to the surface, correct?
A. Correct. He'd be at the periscope.

Q. When the periscope breaks the surface?
A. From the point he departs. The point of this is, that at time 1335, I agree with you and I'm pretty well convinced that between 34--all the time between 1334, 34--the green ones on this display, the Fire Control Operator what was probably focused on Sierra 14 that was up on his display. I would say it's very probable. And the way it normally would work is he would--he's satisfied that he had a good solution on Sierra 14, and he entered system that 1335:03, it would be normal for him to go back and review his other contacts before going to periscope depth. I don't know when that happened, but I don't think he would--you could not have updated Sierra 13 without some period or interval of evaluating the solution before 13 that he entered at time 37. So, sometime between 35 and 37, he went back to 13 to do further evaluation. Normal--normal way it would be done, he would do it shortly after 35. He would have been back on the trial solution of Sierra 13 for further evaluation.

Q. And, I think what you're saying, sir--correct me if I'm wrong, is that there would be some period of time where the Fire Control Technician of the Watch would be reevaluating the contact, Sierra 13, evaluating the data, applying his knowledge and experience and training to that contact to try to update the solution, correct, sir?
A. Correct.

Q. And, in fact, he may have had--he may have computed the solution--a displayed solution prior to entering the system solution?
A. Most likely. Absolutely.

Q. And, if that happened before the OOD gave the order, proceed to periscope depth, that would be a time when he should, according to procedures and training, inform the Officer of the Deck of the new contact position at 4,000 yards, correct, sir?
A. I would expect he would have reported that.

Q. And, if he didn't, sir, that would be a substantial failure on his part, would it not?
A. I'd consider it a shortfall.

Q. It would be a serious shortfall, wouldn't it, sir? That's safety of a vessel, is it not, sir?
A. It's an important report. If he sees a contact, especially one at that aspect, it would show his line of sight that would be threatening. I would think that he would make that report.

Q. Thank you, sir. Now, with respect to--I believe it's Exhibit 22, sir, were Sierra 13, the baffle clearing turn drives Sierra 13 with a bearing rate to the right and unmasks Sierra 14?
A. Yes.

Q. Wouldn't you expect, and wouldn't it be true, sir, that having two contacts on the same bearing for a significant period of time would make it more difficult for the Sonarmen to classify the contacts?
A. Yes. It could--it could impede their ability to classify the contacts.

Q. And, in fact----
A. Not necessarily, so. It depends on the strength--the relative strengths of these contacts.

Q. Yes, sir. And, in fact, in this case, Sonar did not--was not aware that they had two contacts until that baffle clearing maneuver, correct?
A. I don't know that for a fact. I don't think they--I don't believe--I think there was a certain amount of confusion, so I don't believe that they--Sierra 14 was--I don't think they knew that second contacts was there.

Q. Well----
A. In the time--in the time in the time preceding, when they were on the same bearing, I don't think Sonar realized there were two contacts there, sir.

Q. In fact, Sierra 14 is first logged both by sonar and the SLOGGER at about time 1333, correct?
A. Correct.

Q. And, when you identify the target, give it a Sierra number, that indicates--- you that when you first identify sonar contacts?
A. That's correct.

Q. If it's the first one of the day is 01?
A. That's correct.

Q. And Sierra 14 would be the 14th contact of the day?
A. Correct.

Q. You indicated, during your testimony on direct, sir, that the--it's not unusual for the Fire Tech--Fire Control Technician of the Watch to have an inaccurate solution early on?
A. That's correct.

Q. As he obtains more data, it will resolve the contact and obtain a solution, correct, sir?
A. The solution normally--depending on how well the ship is driven with respect to that contact, not that you have a driver for every contact, but depending on the quality of the maneuvers, with respect to that contact, the solution will--should steadily improve.

Q. And, information provided in the 45 or so minutes prior to the system solution being entered at time 1314, that's not information that you would get--the Fire Control Technician of the Watch is required to ignore, is it sir?
A. I'm sorry? I--I----

Q. The information--the information that's displayed, that you get--that the Fire Control Technician of the Watch obtains from Sonar over the time prior to entering a system solution, is information that is of some importance to----
A. It's very important. That's how he does his evaluation. He looks at the data. All the data that's presented there, and it's all stored on the screen, so he can--when he does his evaluation, the more data he has, the more likely he's able to come to conclusions.

Q. And, you would agree with me, would you not, sir, that at least for the period, approximately 1255 to the increase of speed, sonar had a pretty good fix on Sierra 13?
A. She's tracking well. That data was all available for the Fire Controlman to process.

Q. Now, it appears to be reliable data, correct?
A. Yes.

Q. And, during this period time, between 12--1255 and when--when we lose the data due to the high-speed maneuvering, GREENEVILLE was day-steaming at--below 150 feet, correct, sir?
A. That's correct.

Q. So, there's no particular threat to the vessel at that point in time, was there?
A. That's correct.

Q. And, at 400 to 600 feet, the Fire Control Technician of the Watch would not necessarily be focused on contact analysis at 400 to 600 feet, correct, sir?
A. The Fire Control Technician of the Watch. That's his job.

Q. So, he would be doing it all the time?
A. Yes, sir.

Q. So even at 400 and 600 feet?
A. Yes, sir.

Q. So, this data that was compiled during this period here, between 1255 and approximately 1325, is all data that--that he would have been familiar with and using to work the solutions?
A. That's correct. I'll tell you that if you look at that--you would not be able--I would not expect to see them generate a very good solution. Just out of coincidence, this is all pretty much on the same bearing. As I mentioned, the fire control

system likes and will help--comes to a conclusion faster if you're changing bearing. And, just coincidentally, the way GREENEVILLE was driving at that time, they were pretty much on a steady course heading north. They weren't, at that time, driving particularly to derive a solution for this contact, and it just so happened, that there was not particularly good maneuvers to help resolve the solution.

Q. But, in fact----
A. So, he's doing the best he can, with what he has, and I'm not surprised if it's a little bit inaccurate, because they were not optimal maneuvers for that contact.

Q. But, in fact, sir, are at 13--at time 1314 it obtains and accurate solution from Sierra 13, does he not?
A. Yes, he does. But--you know, that--what I'm trying to explain is some of this over here, where it's not so accurate, it's not it's not surprising.

Q. Sure. But, the system solution entered, at 1315, is an accurate solution in this case?
A. Except for the course.

Q. Except for the course, which is a flip course, the kind--that is not uncommon error, is it, sir?
A. Not an uncommon error.

Q. And, that doesn't indicate the Fire Control Technician of the Watch was not doing his duty; it just indicates he made an honest mistake?
A. That's correct.

Q. He evaluated the data and came to an incorrect conclusion?
A. That's correct.

Q. You said during your testimony, sir, that the Commanding Officer is required to do an independent review of fire control solutions, correct?
A. I said--what I meant to say--what I was trying to intimate was that it needs to be an independent evaluation of the contact picture and the accuracy a solution. Whether that means going to the fire control screen, itself, that--that's up to him to decide. But, he has to understand the contact picture, and that it’s--he has to check the safety of the event going to periscope depth.

Q. I understand, sir. Would you agree that a Commanding Officer going into Sonar and reviewing that raw sonar data, and talking with his Sonarmen, would fulfill part of that requirement?
A. Yes.

Q. That would be what you would expect the Commanding Officer to do to verify the contact picture, correct, sir?
A. That'd be one step.

Q. One step. In particular, with the ASVDU out of commission, that would be a reasonable thing for the Commanding Officer to do, given that he doesn't have that same data available to him in the Control Room, correct sir?
A. Yes, I agree with that.

Q. Would you also agree, sir, that it would be reasonable for a Commanding Officer, in the methodology to verify the contact picture, to review the Fire Control Technician of the Watch's consoles?
A. That's a reasonable approach.

Q. And, the Commanding Officer, based on your knowledge of the Commanding Officers here at Pearl Harbor, would be of--would have sufficient training to understand what was displayed on those consoles, correct?
A. Absolutely.

Q. Would you also agree, sir, that in verifying the contact picture, it would be reasonable for the Commanding Officer to rely on the Navigation Supervisor to determine the ship's relative position to land, and the relative to position to contacts to the land--land mass, Oahu?
A. I'm sorry. Ask that question one more time.

Q. Yes, sir. Would you agree that it would be reasonable for the Commanding Officer, in verifying the contact picture, to consult with the Navigation Supervisor to determine ship's position in relation to land, and to apply that to the contact picture displayed by the Fire Control Technician of the Watch and sonar data to the Commanding Officer for his review?
A. Yes, I agree with that.

Q. Now, in this case, sir, you've been somewhat critical of Commander Waddle's and the OOD's TMA leg--the short leg, correct, sir?
A. I don't think it was--yes, sir. I've been critical.

Q. You've been critical of it. You don't think it was a sufficient leg, correct?
A. Correct.

Q. But, in fact, throughout--after the high-speed turns are completed, GREENEVILLE has good data--tracking data on Sierra 13, correct, sir?
A. What are you asking there? Is the sonar tracking it?

Q. Sonar tracking it, and the--yes, sir that's it?
A. Sonar's tracking of the contact, after high-speed maneuvers, it's after--I'd say it's a good track after this last--you know, this looks pretty good right here. This dot, followed by these here.

Q. And, during that same period, fire control is obtaining good data for input into the system, correct?
A. Yes, it is.

Q. And, in fact, the data is sufficient so that when the Fire Control Technician of the Watch actually computes the system solution, he is able to compute it, correct?
A. That's correct.

Q. And, its an accurate system solution, correct?
A. It is.

Q. So, although you're critical of Commander Waddle's TMA legs, in fact, the TMA leg did provide sufficient data to obtain a computed system solution that was accurate in this case, correct, sir?
A. It was sufficient to--I said that this morning, it was sufficient to drive the solution in the fire control system, but not sufficient--totally not sufficient to highlight on the displays for independent verification by the rest of the team. Only one person has this data. It's on the fire control screen and it's only there for a short period of time. It's not--it's a short leg for the people in Sonar to evaluate, the Sonar Operators. It is a fairly short leg. There's not much chance for independent verification of the close--close encounter. But,

it does--it is sufficient for the machine to come up with an answer that's fairly accurate, as you can see there.

Q. Yes, sir. And, just like at time 1335 or 1333, Sierra 14 shows up on the other fire--in the fire control picture, it also shows up in the sonar picture, doesn't it, sir?
A. Yes, it does. It had to start in Sonar.

Q. It had to start in Sonar. And, in fact, Sonar would have been working that contact as well, correct?
A. They would--they would apply--all they need--what they need to do is say would detect the contact orally, probably, to see the trace on the screen, they'd listen to it with the audio cursor, recognize it as a true contact, assign a number to it, gain it as a contact, log it, and then once it's assigned, it's placed into automatic tracker following it would go to Sonar--to fire control for analysis.

Q. And, at the same time, they would be trying to classify it, correct, sir?
A. Yes, they would.

Q. So, there would be some activity, in Sonar, with respect to Sierra 14?
A. That's correct.

Q. But the relevant time, when you indicated that this bearing rate was generated?
A. Yes. But, there are--that's the reason we have two operators in-- that's specifically why there are two broadband operators assigned at that time. One is searching for new contacts, and one is evaluating and processing existing contacts.

Q. Sir, well isn't it true that during the time that Sierra 14 was gained, Sonar's attention would have been diverted to that target?
A. I can't really say that. Sonar's requirement is to continue to check existing contacts, and to absorb all the contacts in preparation to go to periscope depth. When the Officer of the Deck said make preparations to come to periscope depth, its incumbent upon the Sonar Operators to focus on all the contacts, not sequentially, so much time on each one of them to understand where they all are and make sure that there's good track being provided to the fire control system.

Q. Well let me just ask you this, sir, you've--you've made an assumption that in--that the Sonarman did not identify the bearing change of Sierra 13 because the TMA leg was short. Correct, sir?
A. Yes.

Q. Isn't it also a reasonable possibility that they were occupied with Sierra 14 trying to classify Sierra 14, sir?
A. No. I don't think it is very reasonable because----

Q. Well let me ask you, sir----
A. Because the--Sierra 13 and Sierra 14 are on the same display, they are only a fraction of an inch apart. If they were focused, or looking at 14 at all, and 13 started to drive to the right as it would have been, you could not possibly focus on one without seeing the other.

Q. Did you ask the Sonarman that question, sir?
A. I can't remember for sure, specifically that question.

Q. Well wouldn't you agree, sir, that that would be an important question that you need to have the answer to before you could make that speculative answer you just gave me on your last question?
A. What?

Q. You said that you believe that the Sonarman would have had to have seen Sierra 14--Sierra 13's bearing drift?
A. Yes, sir. If--that display is such that it would be almost impossible not to see that bearing drift on Sierra 13 if you're looking at 14. They’re on the same display. It's not like it's in a different room. It's adjacent. They're on the same bearing--it's on the same display. The one--the one bearing takes off to the right, that would be--it would be almost impossible--I can't see any way that they would not immediately pick up on the fact that the one contact is dropping off to the right at a high rate.

Q. You can't see any way, but you didn't ask and find out that information, correct, sir?
A. I did not ask that question. I don't remember if I did or not.

Q. Sir, what is the sequence of a Sonarman's action for a new contact?
A. I just went through that a minute ago. You would gain--you would see the new contact on the trace----

Q. Is that detection, sir?
A. That's detection.

Q. What's the next thing you would do, sir?
A. You'd put a tracker on it.

Q. And what's the next thing you'd do?
A. Then you'd work on classification.

Q. What did Sonarman Reyes do upon detection of Sierra 14, do you know?
A. I don't remember, specifically.

Q. That would be a piece of information that would be of benefit to your analysis of this problem, wouldn't it, sir?
A. Which problem?

Q. Well you indicated that the Sonarman should have seen the bearing drift on--after the TMA leg. Correct, sir?
A. Yes.

Q. Wouldn't you agree that it would be beneficial to your analysis to know exactly what they were doing? To have their testimony to tell you exactly what they were doing, sir?
A. It would be beneficial. But, I--I still stand by my statement that the contacts are at the same location, a bearing rate of right 6 or right 11, or right 13 would be not something you could ignore, even if you're looking at Sierra 14, or thinking about Sierra 14. The movement of Sierra 13, on a strong bearing rate to the right, would be something that you could not miss on that display.

Q. Well, it was not a bearing rate of 11 degrees a minute, was there, sir?
A. Right. Six, but if--if the con--if the leg--if that maneuver at three-four-zero had been longer than a minute, as I displayed earlier today, if it had been 3 minutes, or about that length of time, it would have generated to a right 11. And, a right 11 bearing rate it would be immediately apparent to the

Sonarmen in there standing watch on those consoles. They would have reacted to that. I can--you know, I am sure they would've----

Q. Well, sir, let me ask you----
A. The Sonar Supervisor would have looked--reacted to it. It's immistakable.

Q. Sir, don't you think that the fire--the systems solution at 1337 would have been the immediately obvious to the Fire Control Technician of the Watch?
A. Yes, it was. He had to--he had to believe on it.

Counsel for CDR Waddle, party (Mr. Gittins): Sir, this would probably be an appropriate time to take a break.

PRES: I agree. Thank you very much. This court will be in recess for--we've got a lot to cover, so let's get back here in what, 15, 16 minutes. We'll make it 1505.

The court recessed at 1450 hours, 9 March 2001.

The court opened at 1505 hours, 9 March 2001.

PRES: The court is now back in session.

CC: Let the record reflect that the members, parties and counsel are again present. Would you recall CAPT Kyle to the stand, bailiff?

BAILIFF: Aye, sir.

[The bailiff did as directed.]

CC: CAPT Kyle, would you please take your seat again in the witness box. And, sir, I remind you that you're still under oath. Understand?

[The witness resumed seat in witness box.]

WIT: [Affirmative response.]

Counsel for CDR Waddle, party (Mr. Gittins):

Q. Sir, if a contact is continuously held by sonar, does a depth change significantly impact the ability to the fire control system to calculate a solution?
A. Not on a spherical array.

Q. And, this spherical array is what the----
A. Was being used this day, in this particular instance.

Q. Now, sir, with respect to the chart--the USS GREENEVILLE parameters, 6 degree--degree chart-- it says "USS GREENEVILLE Parameters" at the top, course, speed and depth. The USS GREENEVILLE parameters chart, that you used, to compute the length of the leg, the TMA leg, that's a--what, in relation to that chart is that, sir? How many charts previous to that did you—did you prepare?
A. We had another version of this chart that was at a 1--1-minute interval. This was about as fine as we could get, in seconds.

Q. Yes, sir. You actually have data for 1 second, correct, sir, takes you to 1 second?
A. Yes. But, the program we have that generates this, would not-- could not use that much data.

Q. Yes, sir. And, in fact, if you rolled back to 5 second data points, rather than 10 second data points, that would give you a longer leg, wouldn't it, sir? It would be a more refined course?
A. Slightly. Even between the 1 minute and 10 second iteration or status sampling rate, the difference is a matter of a few seconds only.

Q. And--and, as you testified, a few seconds may have mattered in this case, correct, sir?
A. Not appreciably. In this--in the analysis of this fire control solution, a couple of seconds--we're talking minutes would have made a difference. A few seconds I don't think would've changed things, significantly.

Q. And, in fact, the same fire control solution would have been obtained for a 3 minute leg, as was obtained by a 1 minute leg in this case, isn't that true, sir?
A. Well, I don't know that to be a fact, either. If it was a longer leg, he may have had a bet--more accurate solution than he obtained after the 1 minute leg.

Q. Well, certainly the solution that was obtained at time 1337 was sufficient----
A. Pretty close.

Q. Sufficiently accurate solution to prevent a collision in this case, correct, sir? If it had been identified to the Officer of the Deck and the Captain?
A. It probably would have prevented this collision if they had known it was that close.

Counsel for CDR Waddle, party (Mr. Gittins): Thank you, sir. Could you please put up the expanded time bearing slide? It's the one that had the arrows on it.

[The bailiff did as directed.]

Q. Sir, with respect to this diagram, expanded time bearing--that's a hugely expanded time bearing display, isn't it sir?
A. Yes, it is.

Q. That--what the Fire Control Technician would see doesn't really look like that on his screen, does it, sir?
A. No, it doesn't.

Counsel for CDR Waddle, party (Mr. Gittins): Bailiff, would you please retrieve Exhibit 24 and show it to the witness.?

[The bailiff did as directed.]

Q. Exhibit 24, sir, is the exhibit that's closer to what the Fire Control Technician of the Watch would see on his display, is that not true, sir?
A. It largely depends on what bearing scale he uses and time scale. It would--this is probably more closer than what's up on the screen here.

Q. And, there's a--kind of a--on Exhibit 24, sir, which was pulled from the SLOGGER data on Sierra 13?
A. Which is Exhibit 24?

Q. 24 is the one I just had you provided, sir.
A. This one?

Q. Yes, sir. There's a data point that could have confused matters, isn't that true, sir? The extra dot, sir?
A. The extra dot. The one that’s tailing this dot down at the bottom? The very first one?

Q. Yes, sir. Is that--first of all, is that depicted--is the dot at the bottom--the one that tails off as you just described, is that depicted on your chart, sir?
A. Yes. It's right here.

Q. Okay. And, that dot may have--that may have confused the Fire Control Technician of the Watch, as well, isn't that true, sir? Coming out of a turn?
A. It may have confused him, I suppose. I mean I can't--I can't--if you look at the consistency of the data, remember this is just a cut off, there's data before this. There's some data before this, I believe. Maybe one other dot coming off the turn, but that--that indication alone, the fact that coming off the turn and the bearing rate coming around, you could say well that was probably--maybe a poor track, but it could have been--it's probably a little bit ambiguous and needs some resolution.

Q. Yes, sir.
A. It could have been a real bit bearing. It could've been a poor track bearing.

Q. So what the Fire Control Technician of the Watch saw is not quite as clear as what you portrayed on expanded time bearing slide that's displayed in front of you, correct, sir?
A. What do you mean by clear?

Q. Well, as you indicated, there's some ambiguity. It's in a smaller scale and would be more difficult to----
A. All the data that's on here is on this display is well.

Q. Yes, sir. But, the scale is different?
A. The scale is different.

Q. Substantially different?
A. Yes.

Q. Making it less----
A. But, that doesn't mean--I don't know what scale the Fire Control Operator was in. He could blow up that scale to almost--in fact he could blow it up more than that.

Q. Yes, sir. Is that what normally happens?
A. Could be.

Q. Sir, I'm just asking you to tell me what's normal in your experience as a 24-year submariner.
A. I don't know that there is a normal here. He would blow up and focus in on that contact to the degree necessary until he could get a comfortable bearing rate. If he needed to measure this bearing rate, this part of this bearing rate or this part of this bearing rate better he could expand that scale to get a good measurement.

Q. Yes, sir. Thank you. When you were pointing to this bearing rate and this bearing rate----
A. The 6 degrees per minute bearing rate----

Counsel for CDR Waddles, party (Mr. Gittins): Hang on, sir, let me--I'm going to----

WIT: I'm sorry.

Counsel for CDR Waddles, party (Mr. Gittins): I'm going to do it for the record, if I can. The first "this bearing rate" you referred to the bearing rate on Exhibit 24. The second "this bearing rate" referred to the expanded time bearing rate on the screen--on the slide that's on the screen.

PRES: Thank you, Mr. Gittins.

Counsel for CDR Waddle, party (Mr. Gittins): Yes, sir.

Q. You did interview FT1 Seacrest, correct, sir?
A. I told you I wasn't present for his interview.

Q. He was interviewed and you reviewed his----
A. He was interviewed by the NTSB.

Q. Yes, sir. And, you reviewed the results of that interview?
A. A summary.

Q. A summary. And, as you----
A. Not the transcript, just the high points of the interview.

Q. And, as you sit here today, sir, you don't know what scale he was in, correct, sir?
A. No, I don't.

Q. And, you don't know what procedure he may have followed, correct, sir?
A. No, I don't.

Q. And, so, for this Court of Inquiry to have a full understanding about what the Fire Control Technician of the Watch may have done, his testimony would be beneficial to this hearing, correct, sir?
A. I would think so.

Q. With respect to this slide that's presently on the screen, sir, in the determination of bearing rate by the Fire Technician Off--Fire Control Technician of Watch, using the time bearing mode of fire control, how can a sonar tracker tracking off affect that bearing rate determination?
A. As I stated earlier, if the bearing--if the fire control--that's one of the important aspects of staying on a leg long enough to insure that you have consistent reliable data. If the sonar is tracking off, it'll track off, it will become randomized, and you recognize that that's not consistent track that you need to get the tracker back, operate it. The Sonar Operator can pay more attention to it and steer it back onto the track and then evaluate it better. And, you need to stay with it--stay and continue to observe the data coming from Sonar, to make sure it's accurate and reliable and consistent data.

Q. Yes, sir. The bearing rate that you described, and which is depicted on the slide that's on the screen, titled "Expanded Time Bearing," determination of bearing rate is not automatic, it requires operator error, is that not true, sir? Operator action, not operator error, sir. Sorry.
A. Well that's not technically true either. The fire control system itself will determine bearing rate--an instantaneous bearing rate, so he has some indication of that's basically point-to-point bearing rates. It's sort of fair--it gives you an idea of instantaneous bearing rate that the Fire Control Operator can look at. Normal practice is he'll have the time bearing mode up. He'll try to measure through--you know, ferret through the data scatter, or the hunt of the tracker, and come up with the best estimation of the bearing rate. And, when he sets the solution, tries to match the solution bearing rate to what he's measured on the fire control screen he also should refer to the instantaneous bearing rate to see if that's

consistent. He’s trying to match all those things together. That's his process of evaluating the adequacy and accuracy of a solution.

Q. The--to determine the bearing rate, though, the instantaneous bearing rate from dot-to-dot, that is not necessarily accurate, is it, sir? It's highly variable?
A. It is variable.

Q. And----
A. When you have strong contact data, if it's coming in with strong SNR and it's consistent, it's not a bad estimation of what the bearing rate is. It depends. But if you have good SNR, which is also displayed there, a good strong signal, you have more faith in what that--what that bearing rate is.

Q. And the SNR that you're speaking of, sir, signal-to-noise ratio, that is displayed instantaneously, it's not displayed as a trend, correct, sir?
A. That's correct.

Q. And, that is another highly variable parameter from moment to moment, isn't that true, sir?
A. Not exactly moment to moment. That's my experience.

Q. From data-point to data-point, sir?
A. Not necessarily. It--again, if you have good track and the SNR maintains consistent, it may go from +2 to +3, or +5, but it doesn't--it's not--it's not varying with every point. There may be--you can sort of mentally determine a trend--a consistent trend of bearing--of SNR. For instance, in this--it's not on that display, but one of the other graphs, it shows you a bunch of +6's and 5's and 3's and you say, “Well, that's pretty much consistent. Strong SNR.”

Counsel for CDR Waddles, party (Mr. Gittins): Yes, sir. Would you mark this, please [handing document to reporter]?

CR: This would be marked as Exhibit 44.

Q. Sir, I've handed you Exhibit 44, which is a signal-to-noise ratio, point-to-point SLOGGER for Sierra 13?
A. Yes.

Q. That's from SLOGGER data?
A. Yes.

Q. That's a data point that is found in the SLOGGER data that you retrieved from USS GREENEVILLE, correct, sir?
A. That's correct.

Q. From point-to-point, sir, wouldn't you agree that there are wide variations in signal-to-noise ratio?
A. It all on depends on your definition of wide. For instance, if you look between time--this set of data around--I guess it starts about 1330 to 48, 40--48, that's all right around 5 to 6 to 7 DB of SNR. That's pretty consistent. And, it may be bouncing around that, but that's what the operator's keying on. It's positive. It's around 5, 6, 7, 5, 6. It's variable, but within a bound, and you can--you can assess that, assimilate that in your mind, and say think back to these others. There's groups where they--yes, they vary from second to second, but they're all around a--you know, a specific value, and you can kind of map a trend. When I--when you first read the contact, it would be at such and such SNR. When he first gained it, it would be at -15 and now it’s +5. It's typical--the reason--as I stated earlier and if you can look on the CEP we had, we had a trend of SNR plotted on the CEP plot, and that's commonly plotted there to help in looking at overall long-term trend of what the SNR is doing. But an operator--qualified operator, could use that data to make some conclusions about the global trend of the SNR. I agree with you that from second to second it may vary around some mean value.

Q. And, there's no indication--there's no indication the Fire Control Technician's console of a trend? There's no graph similar----
A. There's no graph like that. But, it's one of those things where you note it. You note it again in the next minute. You keep track of it sort of mentally, and you say it's going up or it's going down.

Q. Yes, sir. A minute ago you just indicated that the--a properly maintained CEP plot would contain signal-to-noise ratio?
A. It could.

Q. It could?
A. Yes, sir.

Q. In fact, NWP 3-21.51.1 provides examples of typical contact evaluation plots in a diagram form, correct, sir?
A. Yes, it does.

Q. And, in fact, the typical CEP plot--CEP identified in figure--in the figures in that NWP does not indicate a signal-to-noise ratio?
A. That's right. It--in traditional----

Q. Isn't that right, sir?
A. I'm sorry?

Q. Is that right, sir?
A. I believe it's right. I don't have the figure in front of me, but I--it's often depicted there because the--it's relevant information. It can be specified--you know, the command itself, or the direction to the FTOW or the maintainer of the CEP plot is often directed to maintain a plot of SNR, if you're interested in that.

Q. Yes, sir----
A. And, that's why I plotted it on my plot because I was interested in that.

Q. Yes, sir. And, SNR, under normal--in the normal course of day steaming in local operations is not normally plotted on CEP's, isn't that correct, sir?
A. I can't say that's true. There are some ships that plot them all the time. SNR is plotted there on a regular basis and some ships it's not. CEP is sort of--it has--it can be customized to your own use.

Q. Usually CEP is plotted--I mean SNR is plotted on the CEP for tactical reasons, correct, sir?
A. Yes.

Q. Particularly when you're tracking sub-surface contacts, correct sir?
A. Not particularly. Not necessarily.

Q. But, that's one of the reasons you would plot----
A. One reason, possibly, you would plot it.

Q. And you would agree with me that the NWP does not indicate that SNR is required to be plotted?
A. That's correct.

Q. We talked earlier, sir, about what a Commanding Officer is specifically required to do to verify that it's safe to come to periscope depth, and we talked about the Commanding Officer should verify the contact picture. And ways he might do that with a non-operative ASVDU would be to go to Sonar to review the Fire Control Technician's consoles, and also consult the navigation plot. Are there any other things you could do, sir?
A. Yes, sir. I think a critical element of his review--and I think that's one of the issues that comes up in any evaluation of going periscope depth is you want to know the critical element of it. Was the ship driven properly to do--to really ascertain the solutions and to get independent verification of where all the contacts are? Where are they? What are the bearing rates? And then consider from--based on all the bearing rates, to make sure the course that's been picked by the Officer of the Deck is a safe course to go to periscope depth.

Q. Yes, sir. And in the case of GREENEVILLE, the data that was derived from maneuvers of the ship on 9 February provided an accurate fire control solution for Sierra 13, correct, sir? Is that accurate?
A. It provided a fairly accurate solution on Sierra 14--I'm sorry, which contact?

Q. 13, sir?
A. Sierra 13. I'd say the maneuver that placed Sierra 14, if not in the baffles, on the very edge of the baffles to go to periscope depth of one-two-zero was not a good maneuver. I'd say based on the fire control solution to go to periscope depth of one-two-zero was not a good course to go to periscope depth on. It was on a collision course with the EHIME MARU, and those are shortfalls in the way the ship was driven.

Q. Yes, sir. And, that's your opinion based on your review in the laboratory stillness of post-morning, isn't that true, sir?
A. It's the obligation of the watch team, the Officer the Deck----

Q. Sir, could you answer my question? My question called for a yes or no, sir.
A. Yes. But, I also think it's important for the court's understanding that that analysis done in the cool calm collected time of the watch--of the reconstruction is also required onboard the ship before going to periscope depth.

Q. Yes, sir. And, the Commanding Officer by definition, is the person whose judgment at the time is the one that matters, isn't that true, sir?
A. It's really incumbent upon not only the Commanding Officer but the Officer of the Deck.

Q. Okay. And, so those two officer's judgment is what matters at the time, isn't that true, sir?
A. Yes.

Q. In this particular case, CDR Waddle had available to him a time--let me rephrase, sir--a time--there was sufficient data to derive an accurate fire control solution to Sierra 13, correct, sir?
A. Yes, fairly accurate solution. I don't think there was sufficient--probably not sufficient data to drive a good solution on Sierra 14.

Q. Yes, sir. But, in fact, there was system updates for that contact, wasn't there, sir?
A. There were system updates.

Q. And the Commanding Officer is entitled to rely on his knowledge of the shipping area and his experience in making these judgments, is he not, sir?
A. The shipping area and the area--that is a very--that would not be a way you would make your judgment, based on shipping area.

Q. Of course not, sir. But that is a factor he could consider, is it not?
A. It is a factor, but not a very relevant--I mean, it's pretty small on the list. If you really have to deal with the sense--the contacts being tracked by your sensors, not on historical shipping data in a particular area that you're operating in. I mean----

Q. In this case, CDR Waddle was presented with a contact picture that indicated Sierra 13 was an opening contact, isn't that true, sir?
A. Yes, but I----

Q. A computed fire control solution, correct, sir?
A. I'm sorry. Say that again.

Q. A computed system solution for Sierra 13, isn't that true?
A. I don't know when CDR Waddle reviewed the contact picture. At one point it was opening solution, but I don't know when he reviewed the contact data. I'm not sure.

Q. So----
A. At one point and time it was an opening solution.

Q. So, as your criticism of CDR Waddle, you acknowledge that you don't know exactly what he looked at, when he looked at it, isn't that true, sir?
A. I didn't offer any direct criticism to CDR Waddle. I'm just telling you that the courses driven were not probably optimum to come up with the right answer.

Q. But they did come up with the right answer, didn't they, sir?
A. They did come up with the right answer, but they did not drive the ship--in my opinion, the ship--the ship's analysis of Sierra 14 was limited. They came to periscope depth on a course that was a collision course with Sierra 13. And that indicates to me that the Commanding Officer did not have an accurate tactical picture of the situation when he ordered the ship to periscope depth.

Q. Yes, sir. And it's clear from the evidence that you reviewed, that one of the reasons he did not have a clear tactical picture is because the Fire Control Technician of the Watch failed to report to him the contact at 4,000 yards, isn't that true, sir?
A. I don't know that he didn't report that.

Q. Sir, you did review the testimony of FT1 Seacrest, did you not?
A. I did.

Q. Are you testifying here today that you--it is your understanding that he did report that to CDR Waddle?
A. I don't know whether he did or not. I reviewed a summary of testimony of Petty Officer Seacrest.

Q. What did Petty Officer Seacrest say about reporting that contact to CDR Waddle, sir?
A. He said that he could not remember whether he reported to CDR Waddle or not.

Q. Is that your testimony here under oath, sir?
A. Yes, it is.

Q. He could not remember?
A. That's what he told--that's--that's a third-party rendition of the interview with Petty Officer Seacrest at the NTSB Hearing.

PRES: Counselor----

WIT: I was not--I was not present at that interview.

PRES: Counselor, I think--you know, so this doesn't become contentious, I think we're establishing the fact that maybe the witness doesn't know, or the court doesn't know. We don't know exactly what Petty Officer Seacrest did----

Counsel for CCR Waddle, party (Mr. Gittins): I apologize, sir.

PRES: That's okay.

Counsel for CDR Waddles, party (Mr. Gittins): I'm somewhat frustrated with a witness who is completely speculative--speculating about what may have happened. And, I apologize sir. I'll move on.

PRES: Okay.

Q. Sir, can you think of any reason of why a Commanding Officer would proceed to periscope depth in a non-tactical environment if he thought he had a contact inside of 4,000 yards?
A. No.

Q. That--that circumstance would indicate to you that CDR Waddle was not aware of the accurate information available to his ship, correct, sir?
A. That is correct.

Q. Sir, with regard to sonar manning, before USS GREENEVILLE went to periscope depth the sonar was manned by fully qualified Sonar Operators. Three of them, correct?
A. There were three qualified Sonar Operators in Sonar, yes.

Q. And, one of those individuals was Petty Officer Reyes, sir?
A. Yes.

Q. And, he was the fully qualified Sonarman who was backing up Seaman Rhodes on a workload share station in Sonar, correct, sir?
A. Yes. He was present there.

Q. And, isn't it true, sir, that the Sonar Supervisor, Petty Officer McGiboney asked Petty Officer Reyes to remain in Sonar as the ship was departing--was about to depart 150 feet for periscope depth?
A. I don't remember that.

Q. Sir, did you interview Petty Officer Reyes?
A. No, I did not.

Q. Did you review the statements he gave to the preliminary inquiry in this case?
A. No, I did not. I have not reviewed the preliminary inquiry.

Q. Are you aware that Petty Officer Reyes as the workload--work--works----
A. Workload share.

Q. Workload Shares Operator did not have any normal indications of close contact. Were you aware of that, sir?
A. Not directly. I believe, again, when he was--the only knowledge I have of Petty Officer Reyes' knowledge of what happened that day came, again, third hand at an NTSB interview that he--he entered the interview not believing that Sierra 13 was EHIME MARU. I suspect that that's an accurate statement, but I don't know that directly.

Q. One of the indications of the close aboard contact, sir, would be indications in all DE's, correct, sir?
A. That could be one indication, yes. That's not necessarily true.

Q. But that is one indication of a close aboard contact, isn't, sir?
A. Not a hundred percent guaranteed that that's a close aboard.

Q. Not a hundred percent guaranteed, but that is one indication that is relied upon by submariners to identify close aboard contacts?
A. Possible indication of close aboard contact.

Q. Another one is—well--so, at the relevant time before GREENEVILLE departed 150 feet there were the requisite number of qualified Sonar Operators in Sonar, correct, sir?
A. Yes, there were.

Q. And at the time of the collision there were the requisite number of qualified Sonar Operators in Sonar onboard USS GREENEVILLE, correct, sir?
A. Yes, there were.

Q. With respect to the sonar manning you gave some testimony, sir, that in the course of your training duties you identified approximately 20 percent across the Pacific Sub Force Command, Sonar of 680 I--688 I class not in accordance with NWP, correct, sir?
A. The testimony stated that I talked to one of my Sonar Inspectors that said not just 688 I's, but across the submarine force, in general, that he thought basic--basic impression was maybe about 20 percent of the time of his rides he would find someone who was not qualified, maybe was in training status, sitting without a qualified watchstander behind him.

Q. That's based on his experience?

A. That's based on his experience and just--it's not based on a quantitative or detailed review. That yet to be done.

Q. Yes, sir. The 688 I class is configured differently than--than a 688, isn't that true, sir?
A. Yes, it is.

Q. It has an A-RCI installation, is that correct, sir?
A. All 688s could have A-RCI.

Q. Okay. There's two sonar consoles that are removed from GREENEVILLE?
A. Yes.

Q. Correct, sir?
A. They are now A-RCI dedicated consoles.

Q. Okay. So instead of having four sonar consoles, there's only two?
A. Well, there are four--there are four consoles--two of them are based--are employed with legacy system that the ship was built with. Two of them are now this new A-RCI sonar. That is also a sonar system.

Q. I apologize, sir. I didn't use the correct nomenclature. The legacy system is the system that would be used to--for broadband contacts--for broadband sonar and for the classification, correct sir?
A. Correct. Just so it's clear, all the ships of the fleet, 688--regular 688s, not the I 688s and the Trident submarines are also receiving A-RCI upgrades. So, it's not particular to GREENEVILLE or GREENEVILLE specific sub class of 688, Los Angeles class.

Q. Yes, sir. But, in the case of GREENEVILLE, there are less sonar console--to have an under instruction person sit on a sonar console, that means that the qualified Sonarman does not sit at the console, correct, sir? There's nowhere for him to sit?
A. That's correct. You could stand behind him and use his ear--extra earphones. There's two earphone jacks in every console. There's another chair right next to them. He could sit there and still see probably pretty well. But he'd be in close prox--he has to be close proximity to the under instruction watch.

Q. Yes, sir. And, in this case, Petty Officer Reyes was manning Sonar at the time the ship the left depth for 150 feet, correct, sir?
A. Yes. It's my understanding he was in Sonar during the ascent to periscope depth.

Q. Yes, sir. You also testified about the sonar work tape. Do you recall your testimony about that, sir?
A. Yes.

Q. The sonar work tape with the biological--with whale sounds, etcetera, was not being played at critical times when the ship was preparing to prepare scope depth, was it?
A. That's my understanding. Again, I don't know--I don't have that by direct knowledge. That was third-party information.

Q. That was based on----
A. NTSB interviews.

Q. And, to your knowledge based on the NTSB interviews, the purpose of playing the biologic tape was to give distinguished visitors a little value added on their tour, correct, sir?
A. Yes. Give them some idea of what contacts sound like.

Q. Yes, sir. The ship is submerged at deep--at----
A. At deep depths.

Q. At deep depths, where collision's not a concern, GREENEVILLE played a tape that had biologic sounds on it to give the distinguished visitors a flavor of what whales sound like at deep depth, correct, sir?
A. That's correct. That's what I understand.

Q. Would you agree, sir, that that's a little atmosphere for the distinguished visitor cruise?
A. It was part of orientation for them, so they could get an idea of what sonar can do. What it sounds like on sonar.

PRES: Counselor, could I clear something up on that one?

Counsel for CDR Waddle, party (Mr. Gittins): Absolutely, sir.

EXAMINATION BY THE COURT

Question by the President:

Q. Who would play that tape? Who would be the individual that would do that? A tour guide or----
A. A tour-guide could do it. Admiral, it could be an extra watchstander that came in with the group or the Sonar op--Supervisor would assign someone in the room to set that up. It's down on the other end of the Sonar Room from where he normally stands his watch. I can only speculate. It could be anyone of a number of people to set that up.

PRES: Alright.

RECROSS-EXAMINATION

Questions by counsel for CDR Waddle, party (Mr. Gittins):

Q. Sir, just to go back to Petty Officer Reyes, again. Did you make an effort to determine whether not Petty Officer Reyes attempted to classify EHIME MARU, Sierra 13?
A. I don't know that for a fact. I did not--I sat through Petty Office McGiboney's--most of Petty Officer McGiboney's first testimony at the NTSB, but I did not sit through any of Petty Officer Reyes. So I don't know whether he tried to classify. I think you best ask him directly.

Q. Okay, sir. Some of the other indications of a close aboard contact, sir, would be extremely high bearing rate, correct?
A. Yes.

Q. A signal-to-noise ratio that rapidly increases?
A. Yes, that would be another indication.

Q. The sound of the fathometer?
A. Yes.

Q. That would be found on the WLR-9?
A. Yes, active intercept receiver.

Q. Yes, sir. And, also, you might pick up sounds of screws, correct, sir? A turning screw close in range?
A. You'd probably hear that earlier than closing range. I mean that's not a very reliable indication of a close aboard contact. I mean--you have to hear that on some auxiliary sonar system. You might say I could hear that on the underwater telephone.

Q. With the RACS, sir?
A. That's the RACS.

Q. Sir. And, are you aware, sir, that the personnel in Sonar that did not pick up any of these things, the extremely high bearing rate, increase in--a rapid increase in signal-to-noise ratio, WLR-9 indications?
A. Well, that's sort of a--I assumed that's the case, because that's sort of my point as why I think the three-four-zero leg was not long enough. If they had stayed on that leg a little longer, the high bearing rate of 6 to 7 up to 11, and generating to 14, would have been so apparent that it would be unmistakable and you couldn't miss it. And, that's sort of my issue with the three-four-zero leg only being a minute and some odd seconds long is really too short to allow independent analysis, or your sonar team to respond and have an opportunity to see and detect a close aboard contact.

Q. Especially, as you say, they gained a new one and their working on this one, so you need to stay there a little longer to see--watch the contacts unfold, but they did not indicate the things that are normally associated the close--that close contact, correct, sir?
A. Well, they had a 6-degree per minute bearing rate. In my mind, I have personally replayed that in my mind a couple of times. I've looked at it on a--on a simulator, and it's there. It looks there. And, why that team did not respond to that 6 degree per minute bearing rate, I really don’t know. It was present. It was really on screen. I'm sure it was there. Why they disregarded it, or didn't go to it, I don't know. I can only speculate. This was my speculation. It was there such a short time, then--then the ship was maneuvered back to a course that generated another zero bearing rate situation for Sierra 13 and it looked--it didn't look close anymore. It was zero.

Q. The three qualified Sonar Operators who were in GREENEVILLE's Sonar should have been able to track a 6 degree bearing rate, correct, sir?
A. I think it--I think it was apparent on the display. It was starting to bend to the right, and that's the way I look at it, at this point and time, based on the bearings that we have up here.

Q. So, it was there to see?
A. I suspect it was. I can't imagine it not. It was imported to fire control. It had to be on the screen.

Q. And, if it was seen, it's required to be reported to the Officer of the Deck and the Commanding Officer, correct?
A. If there's enough there for the sonar--the Sonarmen has to look at it and say, "I think that's a problem. I think that's 6 degrees per minute. I don't know why he didn't call it. I can't really tell you why he didn't or did. You're going to probably have to ask the Sonarmen that, specifically.

Q. Did you make any--did you reach any conclusions about the qualifications of the Sonarman, who were on duty? Were they fully qualified Sonarman?
A. What conclusions are you asking?

Q. Any con--did you reach any conclusions, in your reconstruction, in their performance of duties as the Navy rep to NTSB about the qualifications of the sonar crew?
A. They were listed in the ship's list of qualified watchstanders as being qualified as broadband operators and Sonar Supervisor, respectively.

Q. Did they appear to have----
A. Petty Officer Reyes and Petty Officer Bowie were qualified broadband operators. Petty Officer McGiboney as Sonar Supervisor.

Q. Did they appear to have the requisite training and experience?
A. Petty Officer McGiboney, I--I attended his interview. He's the only--he's the only person I attended an interview in personally, and he seemed quite knowledgeable. I did not do a full examination or check out of all aspects of his watch, but he--I didn't see anything that indicated he wasn't trained.

Q. So, in short, that 6 degree bearing range was observable on the equipment installed on USS GREENEVILLE?
A. Yes.

Q. And the fire control solution was computed--an accurate fire control solution, to Sierra 13 was computed by the Fire Control Technician Officer up on watch?
A. It appears that way. Yes.

Q. So the SLOGGER data indicated----
A. Saw the SLOGGER data, yes. It's fairly accurate. It's not exactly right, but it's pretty close, good enough to say this contact's close and a threat.

PRES: Counsel, can I ask one question as a follow-up?

Counsel for CDR Waddle, party (Mr. Gittins): Yes, sir.

EXAMINATION BY THE COURT

Question by the President:

Q. Before the--I just--the way the system works, before the data is pushed to fire control, that sonar data would be observable first? There's a lag between the data that's produced in Sonar before it's pushed to fire control?
A. Yes, sir. The sonar tracker is on a contact continuously. The way the fire control works, it takes an integration of the data over 20 seconds and generates one bearing dot to the fire control system. So there is a slight latency there. So a dot appears at the fire control system from Sonar every 20 seconds on a normal setup. They can adjust that integration time onboard the ship, but I would be surprised if they adjusted it.

PRES: Thank you, Counsel.

RECROSS-EXAMINATION

Questions by counsel for CDR Waddle, party (Mr. Gittins):

Q. Sir, the difference of rate, which you just described, that data is provided from Sonar to the fire control plot, is a different time than SLOGGER data is reported?
A. Yes, it is. And, it's processed differently. The SLOGGER data, it goes every 15 seconds and grabs the tracker data at that time. When the time comes around for it to go get the information, it goes against the raw tracker data and rec--archives it. So, the fire--the Sonar's fire control system does a different process. It takes 20 seconds of data and, more or less, averages--it smoothes it, to try to get--excuse me, a more or less faired bearing to take out some of the tracker instability. It's inherent in the way it's designed, to give you a more--to try to smooth it out a little bit and take out some of the noise in the tracker data. So, it's processed a little bit differently. In fact, this SLOGGER data is not exactly, as you stated, this data that you showed on this--I don't know where this came from exactly----

Q. Exhibit 24, sir?
A. Yes, Exhibit 24. I don’t know exactly where this came from but the data on a fire control speed would show 20 second average data, as opposed to this, an instantaneous grab of the tracker. This being up on the screen here, is an instantaneous grab of the tracker data and that--sonar is tracking it.

Q. Okay. So, in addition to be wildly expanded in size, it also does not necessarily reflect the information that was displayed on the Fire Control Technician's console, correct, sir?
A. That's correct.

Q. With respect to baffle clearing maneuver, you indicated that CDR Waddle chose the correct course, three-four--for the three-four-zero leg? Is that accurate, sir?
A. I don't know who picked that course; but the three four zero course would have been a good--it's a good initial leg, and if they'd stayed with that leg longer, it would have been better.

Q. Would you say the ship’s Control party? Is that fair, sir?
A. It may have been the Officer of the Deck. It may have been--somebody on the ship picked that course. I don't know who, specifically, picked it.

Q. And I think you testified that it was a great plan, it just wasn't executed as well as it could have been.
A. That's correct. If he'd gone to three-four-zero and stayed there longer I'm pretty confident he would not have picked one- two-zero as a subsequent course. He'd have figured out that that would not be--he would know that 11 and then picking a 0 bearing rate course would not have been optimal for that Sierra 13.

Q. Well, the one-two-zero didn't put Sierra 14 in the baffles, did it?
A. It was right on the edge of the baffles, if not in the baffles. The bearing at Sierra 14 was--you can see it was--even looking at Exhibit 24, the bearing of Sierra 14 was three-four- zero.

Q. 14 actually--
A. 14 was bearing three four zero on ship's course of one two zero. The baff--the edge of the baffle starts at about 120 degrees on the port quarter, so this is technically about 20 degrees into the ed--into the baffles.

Q. So, the fire control solution--at least the preliminary fire control solution, which was later updated was obtained from Sierra 14 as well, correct?
A. But, that was on very limited data and only one real leg. The second leg on Sierra 14 was with the contact in the baffles, which is very poor tracking, if at all. The tracker will write to the edge of the baffles and will not provide reliable data once the contact is in the baffles. It will track. It will stay over there, but it will not give you good bearings to the contact.

Q. There was also information about very low signal-to-noise ratio available, correct?
A. It was trackable. We had tracked before and after the contact. The reason the below signal-to-noise ratio happened may be because it was in the baffles.

Q. Well, it wasn't----
A. You're listening to your own ship's noise behind you there. You're picking up the noise from the submarine now into the own--its own sonar system.

Q. It wasn't in the baffles the whole time, was it sir?
A. It was not in the baffles on the three-four-zero leg. But, when he came around to one-two-zero it was essentially in the sonar's baffles at that point.

Q. And, Sierra 14 didn’t have any bearing on this accident at all, did it, sir?
A. No. Not directly.

Q. Other than a distraction, perhaps, Sonar Operators----
A. Sonar had to do some processing on that. They had to--you know, focus some attention, as you stated. The Fire Control Operator was obligated to do work on that contact.

Q. So, it wasn't a threat to the ship it was just a distraction for the operator?
A. As it turns out, it was not--it was a distant contact going by. Far away, someplace. That's in hindsight.

Q. Much of your testimony is in hindsight, is it not, sir?
A. Yes.

Counsel for CDR Waddle, party (Mr. Gittins): Could we have the pitch slide--the periscope depth pitch slide, please?

WIT: It's one of the last ones. It's one of the last ones. There you go.

Q. Sir, you plotted--you plotted using the data from SLOGGER, again, on this----
A. Yes.

Q. Expanded depth while at PD chart, correct, sir?
A. Yes, it is.

Q. And the orange is a visual depiction of the pitch of the vessel?
A. Yes, it is.

Q. And the blue is a visual depiction of the digital depth reading, correct, sir?
A. Yes, it is.

Q. Sir, have you ever before plotted pitch of the ship at periscope depth for any other vessel?
A. No, I haven't.

Q. Okay. Would it be fair to say that you have no body of knowledge on what this data actually means to this problem, correct, sir?
A. No body of knowledge. No.

Q. And you've never plotted a periscope depth digital--digital data for periscope depth--I'm sorry--digital data from the--the data from a digital depth gauge for a ship at periscope depth before, have you, sir?
A. Not in my experience. I'm not sure that my team hasn't done that in the past, but is--we haven't had SLOGGER data before this event so I don't expect its ever been plotted before. It's a safe statement.

Q. So, while these two graphs appear to have transients of--on one hand different depths, and on the other hand, a different pitch, you can't say that this is out of the ordinary for any particular ship, can you?
A. Oh, no. This is--this is not--this looks fairly normal in fact. I would say that--you know, I'd say the Diving Officer of the Watch--on watch that day was, unfortunately, in a way, extremely proficient at what he was doing. This fact that he was able to maintain the ship at depth with a downward pitch angle is in his favor. It's very difficult--when a boat is in this position. Its tendency to broach is very strong--to broach

up--just be sucked to the surface by suction forces. I think if that had happened it would have been beneficial to the whole incident because the ship would have been on the surface and would probably have seen EHIME MARU. In this case, this Diving Officer worked pretty hard to keep the ship under water. And having interviewed him directly, he's a very conscientious chief petty officer and--you know, a very impressive gent, and obviously very competent. And I believe he--you know--he probably was working very difficult--very hard to keep the ship on depth for this--this event.

Q. So, this slide is indicative of a crewman who was working hard to do his job?
A. That's correct.

Q. Sir, the periscope search video that you provided, and I'm not going to have you run it again, the first video we saw was a periscope search in low-power?
A. Low-power first and then a high-power sequence.

Q. Okay. And, the low--the power revolutions were at that NWP recommended 8 degrees per second?
A. Yes, they were.

Q. 8 degree--8 seconds----
A. 8 seconds per revolution.

Q. Yes, sir. And, what is the height of eye that you assumed for that--for that evolution for that?
A. We asked the artist to put the periscope at 1 to 2 feet above the surface of the sea. And, I'm not trying--we didn't try to replicate this data into that model, because there is no precision--it wasn't what it was designed for. We asked the graphic artist to give us a depiction of the periscope--of the view from near the surface, say 1 to 2 feet above the surface, just to give an example for the court to understand the difference between a low to horizon--very low to the sea state look, as opposed to one that's high. Not--you know, I didn't try to replicate this data into that--into that model. And, it's--it's just not built for that type of a----

Q. Yes, sir. It's just an example?
A. An example.

Q. And the example of a high-power search, where the ship is at 50 feet, that's in a condition where the ship is nearly broached, correct?
A. Yes.

Q. And that would be what height of eye for the periscope at that time?
A. It'd be about 14 feet. I think we asked for about 12 feet in that video--12 feet of exposure--12 to 14 feet.

Q. Assuming that the GREENEVILLE was raised at 58 feet what would the height of eye have been for the periscope in the conditions that GREENEVILLE faced?
A. 58 feet keel depth. Again, it's difficult to say that exactly, because of the sea state, but if you take an average sea, you average out all the waves, just a difference in math. The visual window is at 64 1/2 feet, so you can do the math there at 6 1/2 feet. But you have to take into account, as that video indicated, the swells that are around the ship and how far you can see.

Q. Yes, sir. So the actual conditions the GREENEVILLE faced in 9 February were at periscope height of eye about half of the video you presented for 50 feet, correct?
A. Yes.
Q. About half?
A. About half. Again, we're talking about the average churn of the sea compared to--it's kind of hard to make a direct correlation like that and say half, because what we're trying to do is, we asked for the first artist's rendition to be about 1 to 2 feet above the top of the crests. So, that--what keel depth that is, I don't want to--it's hard for me to make a direct correlation in this example as to what depth that equates to. It's 1 to 2 feet above the crest of the seas. So, what would that mean on GREENEVILLE's day? I don't know, exactly. I have to go think about that and look at the sea conditions. I--it's difficult to say, 60 feet, 58 feet, somewhere--probably similar. I wasn't there. I wasn't looking out the periscope but I would guess it'd be somewhat similar to what was in that first video, somewhere just above--a couple feet above the height of the swells.

Q. The first video more closely approximates what the crew----
A. Saw----

Q. The GREENEVILLE would have seen, rather than the last video at 50 feet----
A. Yes.

Q. Correct, sir?
A. Yes.

Q. And, you would agree with me, sir, would you not, that that would--the detection of the EHIME MARU, in the first circumstance--the video depicted in the first circumstance would have been a challenging----
A. Yes, it would have been.

Q. Evolution. And that's for an experienced operator, correct?
A. Yes, it would.

Q. And, isn't it a fact, sir, that you never did definitively determine what the actual height of the periscope was above mean sea level--above the wave heights?
A. Which periscope?

Q. The Number 2 periscope.
A. I mean on the GREENEVILLE? Are we talking actual----

Q. Yes, sir. What we've been talking about here for the last day and a half.
A. Well, I didn't know if you were talking about the video example or the GREENEVILLE. The mean sea state, it's difficult--my--I told you my assumptions earlier today. I think the shallow water depth gauge was probably pretty accurate.

Q. Yes, sir.
A. So I think this is probably equivalent to about 57 feet, which was double corroborated by two people. That's about the minimum depth that he saw. So 57 feet--and it's difficult on a submarine to tell you, especially the seas that you saw there today, during a confused sea--a lot of churn, a lot of wind, the ship will ride pretty much at a constant depth and you can go with this mean sea thing. But if you have a swell--a large swell, the submarine will tend to rise with some of those swells and maintain--kind of flow with the swells. And so depending on the size of the sea and how much scope is out there, it's hard to make a direct 100 percent determination of how much scope was above the water and what was read on the depth gauge. It really is a factor that the scope operator has to assess when he has reached his periscope depth, is how well am I seeing above the crests of the seas. That's really--he's obligated to do that.

It's discussed in the periscope employment--NWP. It's really a factor that the scope operator has to ascertain upon reaching periscope depth. And, that's----

Q. I take it from your answer, then, sir, that it would be difficult for this fact-finding board to ascertain what the periscope operator saw in this case, without actually obtaining and having their testimony before this court?
A. That's correct.

Q. And as you just indicated, obtaining the proper view out of the periscope is a matter of operator judgment, based on experience, correct?
A. That's correct. I thought I'd point out that what--what is being seen out the periscope is being projected on displays in the Control Room. So--you know, if I--if I'm riding a ship in a supervisory role I tend to look at that myself and see are we getting a good look out the periscope based on the depth we're at.

Q. On USS GREENEVILLE, sir, is the--is there a repeater, PERIVIS repeater----
A. Yes.

Q. On the left bulkhead--the port bulkhead?
A. Starboard bulkhead.

Q. Starboard bulkhead.
A. Above the fire control screen.

Q. Okay. Is there also one on the port side, right behind the Chief of the Watch, sir?
A. I--I can't remember. There--I understand, again, through discussions that the periscope display was being displayed on other videoed surfaces around the ship, and I'm not sure exactly where they're all located or which ones were lined up to the periscope. But, I know, of at a minimum, there is one over the starboard fire control screen--fire control system that would have been on, if any of them had been on.

Q. You indicated, sir, in response to questions by VADM Nathman, that you would have issued a Temporary Standing Order for the casualty of the AVSDU?
A. I think I said that in an ideal situation, for extended period of time, we're going to go to sea for a long time like this, ultimately, that'd be--that would be a preferred way of

handling the problem. You would issue a Temporary Standing Order.

Q. Okay, sir. I was confuse--I was under the impression that you meant for a 6 hour sail that you would issue a Temporary Standing Order.
A. Not--I'm not surprised--I'm not frankly surprised that it never happ--it didn't happen on the GREENEVILLE, I'm not surprised. I mean, an extended period of time with equipment outage, you would go develop a Temporary Standing Order.

Q. So----
A. That'd be one option for handling--he asked me, "What would you do to mitigate this casualty?" And, I went through the different options that were available to people to do this, not "you could have done it on that day," but----

Q. Yes, sir. But----
A. I'm not--I'm not placing any judgment on having it done or not done on this particular day.

Q. Generating a written standing order would take some time----
A. A few minutes.

Q. Administrative work----
A. No. In this day, I've seen them cranked out in as little as 10 minutes. The guy goes down--and he has it formatted in his computer. He types it up--writes up a thing and he can come back with a piece of paper. It's not really a laborious process. It's a one-page--one-page document.

Q. So, under the circumstances in this case, 6 hour local area operations, a Temporary Standing Order was not required by Sub Force practice or procedures?
A. No. Correct.

Q. This is what I believe your testimony was earlier, sir.
A. I'm not surprised that it wasn't done.

Q. Well, my question, though, was sir, it's not required----
A. It's not required.

Q. Yes, sir. You also talked about ways to mitigate the loss of the AVSDO, sir. One of those ways cannibalize--if you didn’t have a spare part onboard, to cannibalize one of the legacy panels?
A. That was--yes. That's an option.

Q. Well, in a case where you only have two legacy----
A. I----

Q. Panels, you----
A. I----

Q. Would not cannibalize, would you, sir?
A. Probably not.

Q. That would not have been a play here for the USS GREENEVILLE, would it?
A. That's right. That would be--I would think long and hard about doing that. It would not be----

Q. Well, there wouldn't be much point in having three qualified Sonar Operators----
A. In my experience, when I was operating my ships, we had more legacy systems on-line, so taking one out of service was less of an impact for Sonar.

CC: CAPT Kyle, it would help if you could let Mr. Gittins finish his question----

WIT: I'm sorry.

CC: Before you respond.

WIT: Okay.

CC: I'd appreciate it, sir.

RECROSS-EXAMINATION

Questions by counsel for CDR Waddle, party (Mr. Gittins):

Q. You talked a little bit earlier, sir, about the OOD's performance and whether or not he may have been influenced by the Commanding Officer's present--presence in the Control Room?
A. Yes.

Q. You don't have any information, or evidence that suggests that on the GREENEVILLE, the OOD abrogated his responsibilities for operating the USS GREENEVILLE, do you, sir?
A. No, I don't.

Q. That would be speculation on your part?
A. Yes.

Q. When the Conn is transferred from one officer to another, as you described, that is normally logged in the Ship's Deck Log, correct, sir?
A. Yes, it is.

Q. And, that would be the--Quartermaster of the Watch would maintain that log, or some other watchstander?
A. That's correct.

Q. And, the entry would be something, "Captain has the Con," or something like that?
A. Yes.

Q. With respect to the ship's ESM Operator, sir, you did interview the ESM Operators?
A. The NTSB interviewed them.

Q. And, did you review the substance of their testimony?
A. Yes.

Q. There's a WLR-8 electronics surveillance measures video processor data--video processor in the Radio Room, correct, sir?
A. That's correct.

Q. And, that would be a visual--visual indication to operators of signals--the signal strength and the different bands, correct, sir?
A. Yes, it is.

Q. And, in addition, they have headphones that they wear that also indicates signal strength, correct?
A. That's correct.

Q. And, in fact, the oral indication--the headphones indication is the primary means of detecting a signal 4 or signal 5 strength signal, correct, sir?
A. That's correct. As I stated earlier, there's also a speaker in Control that gets that same sort of oral output, so the Officer of the Deck can have that same input--that same sort of early warning of close contact.

Q. The ESM—-there was an ESM operator who was fully qualified, correct, sir?
A. Yes.

Q. And, the other one was under instruction, correct?
A. That's correct.

Q. And they both listened to--they both listened when GREENEVILLE came to periscope depth, correct?
A. Yes, they both did.

Q. So, they were backing each other up, correct?
A. Yes, they were.

Q. And, it is true that neither one of those individuals heard signal strength 4 or 5 radar returns, correct?
A. That's correct.

Q. And, you satisfied yourself that the WLR-8 was in--was within specifications and operating correctly?
A. For the band that that radar would have been in, there was some receiver degradation, but not relevant to the radars run by the EHIME MARU.

Q. Yes, sir. That would be band nine.
A. Band nine.

Q. Band nine was----
A. Was operational.

Q. When you had it reviewed or evaluated, it was----
A. For the NTSB it was within specifications.

Counsel for CDR Waddle, party (Mr. Gittins): Sir, you need to wait until I ask you a question----

WIT: I'm sorry.

Counsel for CDR Waddle, party (Mr. Gittins): Because it’s going to be a problem for the--to the court reporter.

Q. Neither the ESM Operator under instruction or the fully qualified ESM Operator reported close contacts?
A. That's correct.

Q. And, in fact, they reported to the NTSB that they did not observe close contacts, based on their evaluation of the data they had, correct, sir?
A. That is also correct.

Q. In addition to the WLR-8 and the oral indication provided in the headphones of the operators in ESM, there's also, in the Control Room, and early warning receiver, correct?
A. Yes, there is.

Q. And, onboard the USS GREENEVILLE, that would have indicated the presence of a radar close aboard, correct?
A. Could have, yes.

Q. Could have? And there's no indication that any member of the crew heard any oral warning from that early warning receiver, correct?
A. That's correct.

Q. If the EHIME MARU was rating--radiating on 12 mile scale, and I think you testified that the scale really doesn't matter, if the EHIME MARU was radiating at a range of about 4,000 yards, or even 8,000 yards, would it have been heard in the band--should it have been heard in the band signal strength 4 or 5 category?
A. I would think so. As I said, I'm not sure why we had that disconnect there--why it was not detected. I don't know of any--you could miss contacts because of equipment degradation, or unusual ducting or bending of the radar waves, but I can't imagine on that day if there was anything that--causing that. This whole area is, in my mind, still unresolved as to why the ESM did not pick up this contact.

Q. Sir, do you think with the Chief of Staff, Commanding Officer, XO, Navigator, OOD and another qualified OOD in Control, that being Lieutenant Pritchard, that wouldn't one of those individuals have heard an oral indication of a close aboard radar, if one had been given?
A. I do. I do. The only thing that--the only thing--in the Control Room the only thing that could happen is if--it is possible--and I don't know this to be a fact, if you mislined up the early warning receiver and selected a specific band that was not included--that did not include the EHIME MARU's radar, or had the speaker turned down. But, that would mean that the pre--pre-operation test of the periscope was not done properly. The Officer of the Deck is supposed to put that in "all band," which would allow his radar to be heard. Do a test which actually you can hear the signal, a test tone, which replicates a radar, which adjusts the volume of the speaker. And, I think, in the process of doing your interviews of the other personnel onboard the GREENEVILLE, those would be great questions to ask, whether that scope was lined up properly. The verification and testing of that system is, with the audible, to those same individuals. And, that would be----

Q. If they were in the Control Room when it happened?
A. Yes.

Q. And, you are aware--and I think you testified that the Navigator indicated that he had tested it and left it in the proper position?
A. Yes.

Q. And, are you aware that the Officer of the Deck, LTJG Coen, performed a video test in the presence of CDR Waddle?
A. I'm not aware of that myself, but he--I would expect that to happen--I mean that's--that's a standard procedure. I'm not directly aware of that fact.

Q. Yes, sir. Are you aware that in the closed report of the preliminary inquiry that LTJG Coen indicated that he tested the early warning receiver, adjusted the RACS to the sail and adjusted the speaker on the EWR?
A. I haven't read the preliminary inquiry. I don't--I don't know that for myself.

Q. Would you agree, sir, that those are the appropriate actions----
A. Those would be appropriate actions.

Counsel for CDR Waddle, party (Mr. Gittins): Thank you, sir.

WIT: Sorry. Getting ahead of you again.

Q. Sir, after--after you gave yesterday's testimony, did you meet with anyone to discuss today's testimony?
A. No, other than the court counsel.

Q. Tell me--tell me about that meeting, sir.
A. It was just a discussion of what time to be here and what--what the approach was going to be for today. We'd got through direct and so forth, during the day.

Q. Did you discuss what subjects you were going to discuss?
A. We discussed the general topics. What questions he was going to ask me.

Q. Did you review your answers in response to those questions that you were going to be asked?
A. No, not in detail.

Q. Sir, were you--I'm sorry. How many times, while you were the Navy representative to the NTSB did you go on television and brief the press, sir?
A. I believe it was two times.

Q. Do you remember the dates of those?
A. No, I don't.

Counsel for CDR Waddle, party (Mr. Gittins): That's all I have, sir. I'm sorry, sir. [Pause.] That's all I have, sir.

PRES: Okay. Counsel for the Court, do you have any recommendations?

CC: Yes, sir. I just have a couple of matters. Before we recess for the weekend, I'd ask that all parties return any Court Exhibits to the court reporter, so we can keep good track of those. And, the final point that I would make, again, if any of the parties, if any of their counsel have any needs for the weekend, if you need access to witnesses, if you need any assistance at all--supplies over the weekend, please let me know, so we can make those arrangements and get you what you need.

Counsel for CDR Waddle, party (Mr. Gittins): Could we have a warning to the witness, sir, not to discuss his testimony over the weekend with anyone, including counsel?

PRES: Certainly.

CC: CAPT Kyle, you are directed not to discuss your testimony in this case with anyone other than a member of the court, parties thereto, or counsel. You will not allow any witness in this case to talk to you about the testimony he has given or which he intends to give. If anyone, other than counsel or the parties thereto attempts to talk to you about your testimony in this case, you should make the circumstances known to the counsel originally calling you as a witness.

[The witness withdrew from the courtroom.]

PRES: It's been a long week and we're still gathering a lot of information here, a lot of facts. We still have a long path, I think to explore. We'll start that exploration path again on Monday at 0800 with the cross by counsel for LCDR Pfeifer.

Counsel for LCDR Pfeifer, party (LCDR Stone): Thank you, sir.

PRES: This court will be in recess, then, until 0800 Monday morning.

The court recessed at 1619 hours, 9 March 2001.